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FINANCE AND BUSINESS ADMINISTRATION

(Review of References from 1923 to November, 1931)

Prepared by the Committee on Finance and Business Management: CARTER ALEXANDER, *chairman*, R. W. HOLMSTEDT, ARTHUR B. MOEHLMAN, WARD G. REEDER, FLOYD W. REEVES, and A. D. SIMPSON; with the assistance of AMOS C. PENCE.

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PREFACE

THE subject which is dealt with in this issue of the Review of Educational Research is perhaps the most discussed subject in the field of education today. As in the case of economics in general, the problems in the economics of education are now agitating the minds, not only of school superintendents who are charged with the special responsibility for their solution, but of teachers, principals, and everyone else who draws a salary from the public schools. The general economic crisis has revealed weaknesses in the system of taxation and in the basis of school support which have existed all along but which only specialists in school finance have recognized. It now becomes evident that all educators, nay all citizens even, must become intelligent about school finance.

If school people are to become intelligent on school finance, they must become acquainted with the results of fundamental scientific studies of the subject. The solution of the problems in this field cannot be reached by the adoption of hasty or superficial measures. A comprehensive survey of the studies in finance and administration, therefore, will prove of the greatest value to school administrators.

The committee which prepared the present issue has not been so crowded for space as have some of the other committees. It has, therefore, been able to present a somewhat fuller summary of the results of the studies it has reviewed than has been possible in presenting some of the other topics. This is fortunate, in view of the urgency of the topic. On this account, as well as on account of the timeliness of the topic, this issue should prove to be one of the most useful of the entire series.

FRANK N. FREEMAN,
Chairman of the Editorial Board.

INTRODUCTION

THIS bulletin aimed originally to review the educational finance and business management researches since the Educational Finance Inquiry bibliography of 1924. But space limits forced the committee to leave "costs" for the next review in this field. Financial aspects of teachers' salaries are purposely omitted because the review of the Committee on Teacher Personnel of the American Education Research Association, and Willard S. Elsbree's *Teachers' Salaries*, both in 1931, have made treatments of these topics here unnecessary.

The individual members of the committee have had their troubles in deciding what is and what is not research in school finance and business management. But they have not had such trouble as a committee, for each member was left free to include what he thought would be most useful to the probable readers of his section.

The organization of topics originally planned could not be carried out in this bulletin, because some of the materials reached headquarters too late. To meet the Association's time schedule, sections on hand had to be edited, and references had to be numbered as soon as the materials approximated the agreed space limits.

CARTER ALEXANDER, *Chairman*,
Committee on Finance and Business Management.

CHAPTER I

Public-School Accounting

THE initial reporting of research in public-school accounting imposes certain limitations and restrictions due to both lack of space and the fact that this is the beginning of the Association's series in public-school finance. Selection had to be made arbitrarily in terms of what constitutes "research" in this field. By the nature of the activity it must be construed much more broadly at present than in the instructional field. There are very few results of controlled experimentation to consider. Actual experimentation has been very general in type and confined largely to use under field conditions. Much of the effort is based on the trial and the success of a single plan without controls. Space limitations prevented the presentation of some pieces of descriptive research representing compilations, direct or by questionnaire, of current practice in various centers and states.

In general, except for background, this presentation includes a selection of studies made since the publication in 1924 of Alexander's bibliography (**1**, 1924).[1]

Background

The first compilation of this type needs a brief general background in order that subsequent effort may be more readily understood. For early practices and difficulties the reports of the National Education Association committees, beginning in 1860, may be studied with profit. Public-school accounting rests on a wide base of traditional practice that drew its inspiration from many fields. Since 1910, however, the main lines of influence have been much more clearly defined. The chief sources of practice follow rather closely the traditional concept of the executive function into the two groupings of "education" and "business." In those centers where the unit-concept developed, the primary influence has been the gradual functional development of the traditional general practice. Where the dual or multiple-concept of the executive held sway, the primary influence has been that of the "business manager," the modern evolution of the traditional secretaryship. While many of these non-professional secretarial agents originally came into education as a result of political influence, the past two decades have seen a larger number of men, trained primarily in business and industry, appear within the ranks of the professional executive. This new

[1] The boldface number in parentheses denotes the number of the reference in the bibliography at the end of this review. The lightface figures indicate the date of publication. Unpublished documents are designated only by the boldface figures.

type of personnel undoubtedly has modified traditional practice to some extent by the introduction of certain commercial concepts in the form of control records. A third influence has been that derived from other phases of public accounting, notably municipal and state. The first attempt at integration of existing practices to be considered here was the report of the National Education Association (**39,** 1912), whose committee represented both educational and business influence as well as the Bureau of Education. The report was primarily an account classification and did not attempt the development of a uniform accounting method. Method was stressed by Hutchinson in his thesis which represents a pioneer effort in this field (**17,** 1914).

Fields of Influence

Changing needs and the development of the survey movement in public education led to a fairly sharp demarcation in fields of influence and divergent practice by 1920. The third influence, that of municipal and state accounting practice, came after 1912; although Cleveland's *Municipal Administration and Accounting,* with two chapters on public-school accounting appeared in 1909 (**10,** 1909). Of greater scope was the work of Allen and Bruere in collaboration with Cleveland (**4,** 1913), further emphasized by Brittain's article the next year respecting municipal-school relationships (**6,** 1914). This influence was felt in some of the larger surveys, particularly that of Detroit, 1918-23.

The most widely accepted of the early leaders in the educational field was Case of New York (**8,** 1916 and **9,** 1916). By 1920 the educational field was well represented by Theisen of Cleveland, Niffenecker of New York City, and Dallman of Indianapolis.

The leaders in the National Association of Public-School Business Officials included Thomas of Oregon (**38,** 1915), Keough of Boston (**19,** 1922), Morse of New Jersey (**29,** 1926 and **30,** 1930), Dick of Philadelphia, and Hammelbaugh of Harrisburg.

Report of 1921

To reconcile the differences that had developed since the 1912 committee report (**39,** 1912), a second joint committee, representing the National Association of Public-School Business Officials, the Department of Superintendence, and the Inter-City Conference, met with the Commissioner of Education in December, 1921. This conference was composed of superintendents of New York, Philadelphia, Chicago, Detroit, Cleveland, Boston, Indianapolis, Louisville, Buffalo, and Milwaukee. The outcome of this meeting, as reported by Moehlman (**24,** 1922), was a revised accounting classification report for the larger city systems. While the terminology was greatly modified and the "coordinate activities," including compulsory attendance and medical service, were taken out of auxiliary agencies and brought one step

nearer to instruction, there was no attempt to consider a uniform method of accounting. This report was adopted by the three groups concerned and, with slight modifications, is at present the Office of Education official report for fiscal statistics.

Recent contributions to the theory and practice of public-school accounting may be considered as: (a) administration, (b) state systems, (c) local systems, and (d) internal accounting.

Administration

Two basic theories with respect to the administration of public-school accounting have been developed. The first, based on the concept of the functional executive, wherein all complementary activity is subordinated to instruction and under the control of the superintendent, represents the unit theory and was developed as a principle by Theisen (**37,** 1917) and by Moehlman (**23,** 1927) and as a practice by Moehlman and Keyworth in the principal study of the Hamtramck public-school survey (**25,** 1927). The opposite theory, that of the dual and multiple executive, wherein all major complementary activity is coordinate with instruction, finds its strongest supporters in the published reports of the annual meetings of the National Association of Public-School Business Officials (**32,** 1922-31).

State Systems

The Case system (**9,** 1916), including cashbook, voucher register, and distribution ledger, was adopted by New York state in 1915 and put into operation in 1916. This accounting plan with some modifications has been the basis on which many of the subsequent state procedures were built. The Minnesota plan (**21,** 1915) was developed in 1915. The Pennsylvania system, prepared by Engelhardt and Hunt (**12,** 1919) acknowledges its indebtedness to Case. The Idaho system reported by Wilson (**40,** 1922) was definitely influenced by Case. This influence is also obvious in the Wisconsin plan prepared by Fowlkes (**15,** 1924).

The Michigan plan of 1922-23 was a radical departure from the New York plan (**20,** 1924-25). It was influenced much more by municipal and state accounting than by previous educational practice. It made two definite contributions by (a) integrating budget and accounting procedure, and (b) developing the encumbrance column in the appropriation ledger as a means of preventing overdrafts.

Another departure was the publication by Morse and Mount (**29,** 1926) of the New Jersey contractual order system which supplanted the 1918 state system. The Morse system also brings budget and accounting into close relationship, discards the traditional general ledger for what might be termed an appropriation ledger, and prevents overdrafts through the system of "contractual orders."

The Iowa state system reported by Morris (**28,** 1927) follows somewhat the Michigan system in its close relationship between budgeting and accounting. Its outstanding characteristic is simplicity. It follows National Education Association terminology in all respects.

Local Systems

The majority of the states do not designate uniform accounting by statute, and rather wide freedom is allowed the local board of education in the selection of accounting methods and forms. Optional local systems are now based on either the types to be briefly described here or were influenced by auditors employed by boards of education.

Many smaller districts still use the Case system, with some modifications. The simplified accounting developed by Stonecipher and several others (**36,** 1924) has had a vogue in the southwest. It is designed for the traditionally organized (dual executive control) school system and provides for expenditures journal, clerk's receipt record, treasurer's record, and a classified voucher to secure cost distribution. A stock ledger is used. A more extensive but relatively simple form of accounting was presented by Peel (**35,** 1925). Like that developed by Moehlman (**23,** 1927), these systems show much more the direct influence of municipal and state practice. They may be generally described as "revenue and expenditures" accounting. In both plans the ledger is the control record and the heart of the plan. Sufficient subsidiary and facilitating forms are presented to provide complete histories of all transactions.

The Engelhardts described an accounting plan in 1927 which in its principal classifications follows closely the report of the 1921 joint committee (**14,** 1927). In the same year Fred Engelhardt and von Borgersrode published their monograph devoted specifically to accounting for local systems (**13,** 1927). Stress was laid on the taking of monthly balances for budget control.

The Hamtramck survey by Moehlman and Lovejoy supplied a refinement of the accounting plan developed during the Detroit survey (**26,** 1928). This study made four definite contributions: (a) the refinement of the cost technic which was first used during the Detroit survey, (b) the use of the general stores procedure as a means of securing both economy in seasonal purchases and greater elasticity without loss of control by the board; (c) the prevention of overdrafts through use of the encumbrance entry; and (d) the preparation of a new easily expansible account code, based on the Hollerith principle, which provides for an unusual degree of flexibility and may be used by any sized district within a state.

Morse, of New Jersey, under whose direction the 1925 state system was developed, published in 1930 a simplified accounting system for

small school districts, based on the terminology approved by the United State Office of Education (**30,** 1930).

Many other writers, including Reeder, Smith, and Pittenger, have presented interesting chapters on public-school accounting, but these are primarily references to, and recapitulations of the principal systems already in operation and described briefly above. A similar contribution was made in the *Research Bulletin* of the National Education Association by the collection and description of various types of forms to meet accounting needs (**33,** 1927).

In summary, there are numerous variations in accounting systems both published and in actual use. The criteria by which these should be appraised are (a) simplicity, (b) practicability, (c) standardization, (d) adequacy, and (e) flexibility. Any system that rates well in these five characteristics will be satisfactory for use. Selection of a particular method will depend on purpose, size of district, and to some extent on the quality of personnel available.

Internal Accounting

The rapid development of extra-class activities and of special services, such as lunchrooms and bookstores, has created a problem in nonpublic revenue or internal accounting. In practice these accounts are included in either the general finance structure, with subsidiary accounts organized independently of the general budget under board of education control, or left entirely to the judgment and the control of the principal. Internal accounting is organized as a "profit and loss" system as opposed to the "revenue and expenditures" plan of general public accounting.

The first contribution in this field was made by Moehlman (**22,** 1921) when the plan, evolved as early as 1918 in the Detroit survey, was first published after two years of experimental trial. Under this system the general procedure of accounting was subject to approval and review by the board of education, administered by a school bookkeeper under the control of the principal, and was audited and interpreted monthly by the superintendent's office. This basic plan (**23,** 1927) was published for general use in 1927.

Grill's scheme provided for a plan of centralized administration as well as control, with two major classifications, board of education and school accounts (**16,** 1922). Both Moehlman and Grill provided for means of ascertaining costs. Jones (**18,** 1923) developed a decentralized system under the control of the principal in which a teacher acts as a school banker, and the student organization treasurers operate through this sponsor. From the instructional standpoint this plan has much merit, particularly for those accounts which do not primarily pertain to specific board of education activity.

A system very similar to that of Jones was promulgated by Brown (7, 1927). The principal's office was made the clearing house. Plans, similar in general character and emphasizing the project value of well-organized internal accounting, were also developed in El Paso and by Coleman (11, 1927), and by Myers (31, 1929), and Moran (27, 1930). Myers' contribution was the use of the activity budget in conjunction with accounting practice.

A refinement of the Detroit plan grew out of the Hamtramck survey in 1927 by Moehlman and Lovejoy (26, 1928). This plan still carries both board of education and direct student activity accounts in the internal accounting system but permits greater freedom in the school organizations. In the same year Engelhardt and von Borgersrode produced a simplified system that included only student activities (13, 1927).

The trend in internal accounting is toward a complete separation of the so-called board of education accounts and those relating more specifically to student organizations and activities. The service activities, including lunchrooms and bookstores, are already carried as distinct auxiliary agencies in many systems; and there is a definite movement to consider athletics in much closer relation to the instructional program than heretofore.

CHAPTER II

The Public-School Budget

THERE are two dominant points of view with respect to the approach to public-school budgeting. The first, representing to a large extent the traditional set of the coordinate business manager, was expressed by Kinkade (**49,** 1923). Possible income is first determined by the process of estimation and is then allocated to control or appropriation accounts. The second or functional approach was developed by Moehlman (**55,** 1927 and **59,** 1927), who maintains that finance is merely one of the complementary activities necessary for the facilitation of the instructional process, and that budgeting is purely a mechanical expression of instructional policies and procedures (legal and social needs) in terms of money. Whether the approach is functional or empirical is of great significance to a school system. Acceptance of the functional principle makes finance, psychologically at least, the servant; acceptance of the empirical attitude makes finance the master. Similar points of view were expressed by Ballou (**42,** 1918) and Fitzpatrick (**48,** 1929).

Budget Procedure

Budget procedure may be classified as traditional and functional. Both of these may again be sub-divided into the statistical and analytical methods. The traditional procedure, growing out of the point of view presented above, is dominantly statistical. In some instances the analytical type has been developed under traditional practice. Twente (**70,** 1922) proposed a budgetary procedure in 1922 by the empirical method of analyzing *status quo* in 363 cities and evolving sixteen principles of procedure based on existing practices.

The early development of the functional analytical budget by Moehlman (**54,** 1921) grew out of the Detroit survey. Constant experimentation in actual use with several boards of education resulted in a refinement of technic that found its best expression in the Hamtramck internal survey, presented as a philosophy of administration by Moehlman and Keyworth (**59,** 1927) and as a technical procedure by Moehlman and Lovejoy (**60,** 1930). Briefly, this procedure is built on a direct translation of educational policies and procedures and represents purely the mechanical expression of instructional needs in money. It consists of three parts, a general description and summarization to give a quick over-view, a detailed analysis by activity and sub-activity both in narrative and statistical form, and the inclusion of all supporting data on which the first and second

parts were built. This procedure represents a very extensive treatment of the budget activity. The effects of the new procedure were surveyed and reported by Lovejoy (**50,** 1929 and **51,** 1930).

Emerson's (**46,** 1925) discussion of budgetary procedure in 1925, developed from questionnaire study of practice in certain cities, may also be classified as functional in character.

Peel (**61,** 1927) and Wehn (**72,** 1927) published technics for maintaining budget control. Since budget control is primarily an accounting activity, these studies might just as reasonably be included under that head.

Three publications in which budget procedure is discussed at some length appeared in 1929. Rainey (**62,** 1929) considered preparation and content, time, authorization, administration, and the importance of uniformity. Smith (**67,** 1929) approached the problem functionally and pointed out the difference in the legislative and executive aspects of the activity. Reeder (**63,** 1929) in developing mechanical procedure and form went back to Twente's dissertation. These suggestions are more applicable to small districts with simple budget problems.

Weber (**71,** 1930) discussed budget making on an activity basis, with special emphasis on administration and authorization. The study made by Roberts (**64,** 1931) represents a procedure for making, presentation, and administration with special reference to the particular legal requirements of Tennessee.

State Systems

Three state budget systems have been collected.[1] The first study to consider budgeting as one aspect of public-school accounting and very closely related to it was the Michigan plan developed by a committee (1922-24) appointed by the state teachers' association, working in close relationship with the department of public instruction (**52,** 1924-25). This procedure was followed by the Iowa plan (**53,** 1927) developed at the state university, and its practical application to the small district was reported by Castle (**43,** 1921). The Texas School-Budget Law (**41,** 1931), following closely the terminology of the joint 1922 report now used by the Office of Education, represents another step in the direction of uniform procedures for states.

Aims and Benefits

Scholz (**66,** 1921) reported the five aims of budgeting as (a) the maintenance of an equitable share of the community's total revenue, (b) the use of the largest possible amount for instruction, (c) the

[1] A summary of state budget procedures may be found in Chapter XVI of *Five Unifying Factors in American Education*, the 1930 Yearbook of the Department of Superintendence, National Education Association.

securing of the largest possible service and instructional results, (d) the keeping of unit costs in line with experience and with comparable situations, and (e) the elimination of waste. Soper (**68,** 1930) also suggested the application of six important factors in budgeting as a means of maintaining fiscal solvency, and Ross (**65,** 1930) indicated the value of budgeting as a means of securing greater economy.

Appraisal

Need for the appraisal of budgets and budget making was pointed out by Clark (**44,** 1924 and **45,** 1925) and by Moehlman (**55,** 1927). Clark developed a score card based on one hundred units under the main headings of (a) preparation, (b) voting, (c) execution, (d) control, and (e) special. Moehlman's plan includes appraisal on the major items of (a) preparation, (b) presentation and consideration, and (c) administration, with a total of fifteen subdivisions. Soper (**69,** 1930) presented another set of measuring devices for the evaluation of school budgets, while N. L. Engelhardt (**47,** 1931) made a comparative analysis of one hundred city school budgets, emphasizing the outstanding features.

The differentiation between current financial and long time social and financial budgets and their articulation with finance programs of other divisions of civil government was presented to the Department of Superintendence in 1931 by Moehlman (**56,** 1931).

CHAPTER III
Revenues and Taxation

Two outstanding results of researches in this field in recent years are (a) a great increase in valuable factual knowledge through the publication of accurate and complete descriptions of school revenues and kinds of taxes, not heretofore available; (b) a realization by school men that school revenues and taxation cannot be modified materially without basic changes in the whole governmental system, brought about by studies of the approaching practical limitations on school revenues under existing revenue systems.

Revenues

Research on school revenues has centered around changes in the amounts from different governmental units (federal, state, county, and district), and from sources classified according to the character of the revenue (kinds of taxes, and the like). The figures, of course, come primarily from routine government statistics, but the changes are discovered or charted only in special studies.

Sources by governmental units—Although the actual amounts of school revenues from the federal and state governments have increased, the percentages for these revenues have declined. The decline for the federal items has been steady since 1890 (**94,** 1924), (**126,** 1930), despite vigorous efforts to extend federal aid for schools. In 1929, four bills, each appropriating $100,000,000 for this purpose, were introduced in Congress, but failed (**107,** 1931). The decline for the state percentage is noticeable for 1928 as against 1890, but the percentage was higher for 1928 than for 1910 or for 1920 (**126,** 1930). The relative rise in 1928 was probably due to recent state equalization legislation with its additional state aid for schools. Twenty-one states increased their amounts for such aid in the biennium of 1926-28 (**125,** 1931).

The decrease in the state aid percentage was largely taken up by a corresponding increase in the percentages of local and county school revenues which are now roughly 70 percent and 10 percent respectively (**126,** 1930). From 1890 to 1928, the percentage of these two combined increased a sixth, from 67.9 percent to 79.0 percent.

The possibilities in the use of county school revenues stand out in the South Carolina studies by Carpenter and Flowers (**73,** 1929 and **76,** 1929). These authors found that the most efficient schools resulted from increasing the state aid and then having the local district do the least possible, and the county the most possible, on supplementing state school aid.

Sources by character of receipts—The federal government continues to raise the largest part of its educational appropriation from its general

tax revenues. Its only specific revenues for education are those under the Morrill, the National Forest Fund, the mineral leasing land, and special funds acts (**86,** 1931).

The declining importance, squandering, and present fictions of permanent school funds established mainly with lands and money from the federal government, were thoroughly set forth by Cubberley (**75,** 1927) and Swift (**106,** 1931), (**112,** 1927), (**108,** 1911). At the same time, these writers pointed out that the state school systems could hardly have developed without the stimulation of such funds.

State sources of school revenues are briefly listed under the head of "Taxation" in this chapter. The state tax furnishes a smaller proportion of the total school revenues and is less widely used than the state appropriation. In 1928, twelve states levied a state tax on which the public schools had a claim (**111,** 1930). Lindsay in the same year found twenty-seven states using general fund appropriations, twenty a special school tax, and sixteen all or certain taxes (**81,** 1928). Swift pointed out that a state sometimes does not give schools a prior legal claim on a given tax, yet the tax may really have been introduced and levied to produce school revenue. This was the case with the state income tax in both Mississippi and North Carolina (**111,** 1930). Thorough analyses of school revenues for twelve widely distributed states and Alaska appear in the studies by Swift and his students, with the data ranging from 1915 to 1923 (**121,** 1925), (**122,** 1922), (**119,** 1923), (**120,** 1925).

County and local school revenues not coming from the state practically all come from general property taxes (**94,** 1924).

Miscellaneous source possibilities in school revenues include interest on school deposit funds (**82,** 1930); money raised by extra-curriculum activities (**79,** 1925); subsidies on special projects from private educational foundations (**107,** 1931); and the earnings of lands planted in forests (**102,** 1931), (**98,** 1930).

Taxation

The researchers here have, in the main, concerned themselves with securing facts about actual tax systems and with considering the possibilities of other taxes than those on general property. Much valuable work has been done in individual states. Beyond this, the two most important problems studied have been the possibilities of a larger unit of taxation and the ultimate limits of taxation for school purposes. Throughout, the researches have again and again stressed the fact that increased school revenues are often impossible without reform of the whole state taxing system.

General treatments—Swift (**106,** 1931) found no less than nine major types of taxes levied in the United States for the purpose of

providing school revenues: (a) general property tax in 28 states; (b) corporation taxes in 13 states; (c) business and occupation taxes in 8 states; (d) severance taxes in 7 states; (e) income taxes in 7 states; (f) inheritance taxes in 6 states; (g) poll taxes in 5 states; (h) tobacco taxes in 5 states; and (i) gasoline and motor-fuel taxes in 3 states. The same reference has a complete chart for 1929 showing all the school taxes for each of the forty-eight states. Similarly, Swift and Zimmerman make a complete analysis for all the states for the period 1925-27 (**115,** 1929).

General property tax—Cubberley (**75,** 1927) traced the history of the battle for direct property taxation beginning in 1825 with local units of administration, on to present plans for state school finance. Swift (**116,** 1929) summarized prevailing practices throughout the United States on the general property tax as a source of school revenue in 1920-26. He found a serious objection to this tax in that there is no guarantee that it will furnish the amount of money needed (**106,** 1931), but considered that Arizona, Utah (**127,** 1926), and Washington (**106,** 1931) avoid the difficulty by fixing the amount to be raised per child, letting the tax rate be whatever is necessary. In much the same way, Massachusetts specifies certain school facilities and then determines the tax rate (**109,** 1924).

The old difficulty with the property tax arising from inequalities in assessments with resulting inequalities of tax burdens, has become more acute with the advent of the new plans of state aid. These take into account the financial ability of local districts and are greatly facilitated by uniform assessments. During the period, the usual number of studies showing inequalities in areas of interest to the investigators have appeared. Also, the National Industrial Conference Board gave data and analyzed practices in all states for 1930 (**93,** 1930). Oliver's unpublished dissertation (in progress at Teachers College, Columbia University) goes thoroughly into the difficulties in this field (**96**). Young showed how delayed assessments interfering with the collection of school money in New York could be removed (**129,** 1928). Swift cited the Georgia and Ohio tax commissions as condemning legal provisions requiring property of every kind and character to be taxed at the same rate (**106,** 1931).

In spite of such objections, the National Industrial Conference Board concluded that in the future the *ad valorem* on tangible property will still be the most productive source of revenue. It also stated that while tax exemption has been carried too far, it sees no prospect of any material curtailment of exemptions in the future (**93,** 1930).

The waste in school tax collection in Pennsylvania has been shown in several studies, one estimating that for the fourth-class cities in 1924-25, a service worth $50,000 cost nearly a million dollars (**100,** 1926).

Newer types of school taxes—Strayer and Haig in 1922 concluded that New York State needed tax reform rather than new sources of school revenue (**105,** 1923). But in 1929 Carr found the outstanding movement in school finance to be the gradual supplementing of the general property tax by other and more indirect methods of taxation (**74,** 1930). Swift found several states displacing the general property tax (**113,** 1928) with newer types of state school taxes which he summarized as of 1927 (**123,** 1927). Similar summaries were made by Carr for 1929 (**74,** 1930), the Illinois State Teachers Association for 1931 (**78,** 1931), and the National Education Association for 1927 (**88,** 1927) and 1930 (**90,** 1930).

State and local taxes on business corporations produced approximately one-seventh of the total revenue of state and local governments in 1927 (**92,** 1931). Swift listed and described corporation taxes in different states (**107,** 1931 and **106,** 1931).

Gasoline tax revenues went to schools in only Florida, Georgia, and Texas in 1930, although formerly a considerable number of states thus secured school revenue, according to Swift (**110,** 1930).

The National Education Association in 1931 found four states earmarking personal income taxes for schools, and eight supplementing the general fund by such taxes as an important source of school revenue (**89,** 1931). Wittee in 1923 classified and analyzed federal and state income tax laws (**128,** 1923). Swift in 1930 analyzed the income tax laws in seven states (**118,** 1930).

Inheritance taxes, according to Swift, occurred in forty-six states in 1931, Michigan devoted all the proceeds to education, and six states devoted a part (**106,** 1931).

Tobacco sale taxes as used for school purposes were analyzed by Sowers for ten states in 1921-26 (**104,** 1927). Tennessee thus raised $2,500,000 for her schools in 1930 (**78,** 1931). Severance taxes, Swift stated, are levied on natural products in seven states (**106,** 1931).

Individual state tax systems for schools—A great deal of valuable work has been done in giving complete descriptions of the school tax provisions in various states, especially by Swift, the National Industrial Conference Board, and the tabulations of the New York State Tax Commission. Some of these are now out of date, but the New York State Tax Commission (**124,** 1931) revises its tabulations yearly. Among such treatments for individual states are the following:

California (**101,** 1924 and **80,** 1930)
Colorado (**103,** 1924)
Connecticut (**116,** 1929)
Delaware (**77,** 1927 and **114,** 1928)
Illinois (**91,** 1927 and **84,** 1924)
Iowa (**99,** 1925)
Maryland (**114,** 1928)
Massachusetts (**109,** 1924 and **101,** 1924)
Michigan (**117,** 1928)
Montana (**116,** 1929)
North Carolina (**116,** 1929)
New York (**105,** 1923)
Ohio (**114,** 1928)
Oklahoma (**114,** 1928)
Pennsylvania (**97,** 1926)
Wisconsin (**116,** 1929)

Ultimate limits of school revenues and taxation—Researches here have shown that school revenues are limited by variations in wealth, by tax systems, and by the size of the school taxing area. Norton in 1926 showed that some states could not by themselves have adequate schools because of low per-capita wealth (**95,** 1926), and McCuistion (**83,** 1930) indicated the limits for school revenues in fourteen southern states due to the same cause. Of researches in individual states, samples are: Strayer and Haig concluded that New York had reached the ultimate limits of revenue from the general property tax (**105,** 1923); Morrison showed that in Illinois the taxes were destroying the tax base in rural areas (**84,** 1924).

Many studies emphasized the findings that appreciably larger school revenues cannot be secured without larger tax areas for school purposes. Morrison (**85,** 1930) and Swift (**114,** 1928) praised Delaware, which has gone to the state as the unit of school support. Swift pointed out Utah's great advantage in reducing its schools to forty districts (**127,** 1926) and the unique school support features of Maryland's county unit (**114,** 1928). These and similar studies seem to be producing results, for in 1930 half the states were considering increasing the size of their school administrative units (**87,** 1930).

CHAPTER IV

Public Relations

REAL researches in this field on fiscal aspects have been very few, but most of the researches in public relations have been for the purpose of enabling school authorities to secure better school support. Moreover, most of the studies in public relations on this basis have confined themselves to collecting examples, to describing public relations work for school support, and to *ipse dixit* or jury estimates on the value of these examples and work. There has been very little scientific evaluation of the materials and methods used.

The bibliographies of Moehlman (**142,** 1927), Alexander and his students (**133,** 1928), (**143,** 1928), and Friswold (**138,** 1930) cover the references satisfactorily, so that few items need to be treated here.

Interest in school finance—The low interest in the topic found by Farlee (**137,** 1929), Todd (**148,** 1927), and Garlin and Pittenger (**140,** 1921) would probably not hold now.

Avenues of approach to the public—Analysis of these and examples of types of materials occur in Alexander and Theisen (**134,** 1921), Moehlman (**142,** 1927), Stevenson (**146,** 1926), and the Better School League (**135,** 1928).

Evaluation of motives to be utilized—Alexander and Theisen (**134,** 1921) gave this for campaigns. Alexander in 1923 (**131,** 1923) determined by the votes of competent judges the relative strengths of motives for better school support in rural areas. In 1926 Alexander and others (**132**) did the same for current objections made by the public to secondary education.

Media of publicity—Neale (**144,** 1921) in 1921 had a ranking of sixteen types of school publications by prominent educators, in order of their value as effective means of reaching the public. Clark rated school reports in 1930 (**136,** 1931), Reynolds (**145**), Grinnel (**141**), and Garlin and Pittenger (**140,** 1921) studied the effectiveness of newspapers for school publicity. Garlin (**139,** 1927) found that schools after surveys used twice as many media of publicity.

Campaigns and continuous publicity—Alexander and Theisen (**134,** 1921) and Stevenson (**146,** 1926) gave examples of campaign publicity. Alexander (**130,** 1925) and Stevenson (**147,** 1924) discussed possibilities of continuous publicity.

Score cards for publicity materials—Moehlman (**142,** 1927) has devised score cards for such materials which will be suggestive and helpful, but the weights are not scientifically determined.

CHAPTER V

Research and Survey Technics

THE period of this review has seen an exploration of possibilities of old technics and the discovery or invention of important new ones. Caswell (**155,** 1929), and Monroe and Engelhart (**169,** 1928) in their pertinent sections, give the best general summaries. The more important new technics are briefly mentioned separately in this section.

Index numbers—The period has seen the rise and somewhat of a decline of index numbers in school finance. Ayres in 1920 (**153,** 1920) published his index numbers of state school systems, using ten sets of data, five of them fiscal. Phillips later refined the method by taking the changing value of the dollar into account (**172,** 1924). Burgess (**154,** 1920) traced trends in school costs with indexes for teachers' salaries, cost of living, and building costs. Frazier (**161,** 1922) devised an index of six factors to aid in discovering what method of fiscal control is best for a school system. Clark (**158,** 1925) constructed a formula to combine wealth and the ratio of adults to children to obtain a composite measure of the ability of a community to supply education for each child. Norton (**171,** 1926) developed an index number technic to determine the relative ability of the state to support education, based in part on the index technic of Strayer and Haig (**177,** 1923). Clark and associates devised and published various monthly indexes, of which only the bond index now appears regularly (**157,** 1928-32). The possibilities of indexes for cost of living for teachers, school buildings, school bonds, and instructional supplies were summarized by Clark (**156,** 1929).

State aid calculations—Mort, starting with the analyses of Updegraff (**178,** 1922) and of Strayer and Haig (**177,** 1923) gave his first statistical calculations in 1924 (**170,** 1924). He, his students, and other researchers have applied the technics in many states and to various phases like transportation and capital outlay. Some of the dissertations are summarized by Alexander (**149,** 1931).

Critical ratio—McGaughy (**167,** 1924) applied Yule's formula for this so successfully that it has been widely used since in many statistical educational researches requiring consideration of the difference between the statistical averages of two groups.

Bond calculation tables—Johns and Holmstedt (**164,** 1928) devised tables for quickly calculating equal payments for interest and principal payments combined.

Unit costs—Valuable testing and criticisms of the use of unit costs have characterized the period. Moehlman (**168,** 1927) evaluated the

uses of unit costs, including accrued economic cost, of the Educational Finance Inquiry (**177,** 1923). Reeder (**173,** 1929) listed fifteen items on which cost studies may be made advantageously and the cost units which may be feasibly employed. Lovejoy (**166,** 1929) illustrated types of financial statements and reports which were misleading because of undefined or vague cost units. Frostic and others have criticized the commonly used bases of intercommunity comparisons on financial items (**162,** 1930). Lambert analyzed the types of units in 106 school cost studies published between 1911 and 1929 (**165,** 1930). The Laredo Survey in 1929 (**174,** 1929) used fourteen bases of fiscal comparison between cities.

Legal analyses—A distinct movement to study the determining legal conditions of school finance has been so pronounced as to merit mention here. Edwards (**160,** 1922), Henzlik (**163,** 1924), Soper (**175,** 1929), and Yakel (**180,** 1929) are good examples.

Graphic methods—Alexander in 1919, and with Theisen in 1921, pointed out the uses of graphs in making school data effective for better school support (**150,** 1919), (**151,** 1921). He also originated the profile graph technic for relating the ability and effort of a school system on support, of which the Fort Worth Survey (**176,** 1931) furnishes a recent example. Williams published a complete treatise on graphs for educational uses in 1924 (**179,** 1924).

Survey technics—Caswell (**155,** 1929) in 1929 summarized the finance sections of school surveys. He listed, as the most significant recent contributions, the use of a dollar of common value in comparisons over a period of years, and the direct contrast of the ability of a community to support education, with the effort expended.

The nomograph—Problems in school finance often involve the solution of more or less complicated formulæ. Graphic methods may frequently be used to reduce the labor involved in such calculations and to decrease errors and inaccuracies. Such a device is the nomograph which makes possible the solution of equations involving three or more variables by the use of a series of graduated scales. Almack and Carr have applied the principle of the nomograph to the solution of formulæ for predicting school population and for comparing educational need, ability, and performance (**152,** 1926). Dunlap and Kurtz have prepared a series of nomographs for solving general statistical formulæ with special reference to education and psychology. Some of their charts could be applied to research problems in school finance (**159,** 1932).

CHAPTER VI

Finance And Business Management In Institutions Of Higher Education

Most of the scientific studies of finance and business administration in institutions of higher education have been made during the past fifteen years. A comprehensive annotated bibliography of studies made prior to 1924 was prepared by Alexander and published as one of the volumes of the Educational Finance Inquiry (**182,** 1924). Since that volume includes all of the earlier studies which constitute important contributions, no attempt is made here to review investigations reported prior to that time. The present summary includes the more important studies appearing from July, 1924 to July, 1931. Particular attention is given to the more recent of these studies.

Business Management

Organization for business management—Four studies relating to institutional organization set up for business management are very illuminating. Klein (**204,** 1930) pointed out that much confusion exists in the relationships of the business offices of land-grant colleges. The business officer is responsible to the president in thirty-two of these institutions, to the board of trustees in five, to the state board of agriculture in two, to the state treasurer in one, and to the chancellor and the board of regents jointly in one. Six of the seventeen negro land-grant institutions (**204,** 1930) have business officers, three are responsible to the president, and three to the board of trustees. In seven of these institutions the president himself serves as the chief business officer. Agnew (**181,** 1924) found a slight increase towards centralization of organization and control among thirty teacher-training institutions during the period from 1902 to 1922. By 1922, in 80 percent of these institutions, the president had been given the authority for the preparation of all financial reports, including the budget. Reeves *et al.* found that in a large group of colleges of the Disciples of Christ (**220,** 1929) and in a group of Methodist colleges (**226,** 1932), the business manager is responsible directly to the board of trustees in about one-half of the institutions and to the president in the others. All of these studies agree that there is a tendency to secure more effective administration when the chief business officer is responsible to the president than when he is responsible directly to the board or to some other agency.

Accounting procedure—Extensive studies of accounting procedure have been made in land-grant colleges (**204,** 1930), Baptist colleges

(**227,** 1929), Disciple colleges (**220,** 1929), Methodist colleges (**226,** 1932), colleges and universities in the eastern states (**193,** 1926), and state-supported institutions of Arkansas (**236,** 1931). Klein's (**204,** 1930) investigation showed that many of the land-grant colleges fail to set up their accounts in accordance with fundamental principles of good accounting, with the result that much information needed for purposes of administration and control is not available. A somewhat similar situation was found in many of the institutions of the other groups studied. Nothing in the way of standard terminology is employed even in institutions similar in character and under the general direction of the same national church board of education or state governing board. Frequently there is little or no recognition of the differences in the accounting needs of educational institutions interested primarily in keeping their expenses within their income, and of business enterprises operated primarily for profit. A variety of methods are employed in accounting for expenditures for rental and service properties, physical plant, library books, gifts, endowment securities, student aid, student indebtedness, and supplementary business activities, such as dormitories and dining-halls. Recently the need for a new classification of funds and accounts has been recognized by the United States Office of Education (**212,** 1931) and a committee is now at work studying means whereby this may be accomplished.

Budgetary procedure—In a number of surveys and other investigations of institutions of higher education, budgetary procedures were studied and recommendations were made for changes in the methods employed. The budgetary methods used are not very satisfactory; one reason for this is the lack of adequate accounting systems. Leonard (**206,** 1929) found budgets in all but two of the Lutheran colleges. Six of them, however, bear no resemblance to each other and three are merely financial statements. Transfer of money from one fund to another is permitted in all but one college. This is done with the approval of the president in three cases, of the treasurer in three cases, and of the board of trustees in one case. Hamilton (**199,** 1924) concluded that a lack of adequate financial data frequently results in state institutions adopting a policy of padding the budgetary demands to make allowances for reductions on the part of legislative authorities. Irvin (**203,** 1928) found that thirty states have unitary budget control in state institutions of higher education, sixteen have multiple control, and two have legislative control. In twenty-one of the thirty states having unitary control, this control is exercised by the governor, while in the others it is delegated to an appointee of the governor. In the sixteen states having multiple control of the budget, this control is in the hands of one or more state officials in six cases, state officials and members of the legislature jointly in seven cases, and state officials and electors in

three cases. Murphree (**211,** 1927) secured data showing that state budget officers and commissions are tending more and more to encroach upon the rights of presidents and governing boards in fixing institutional budgets. In the survey of publicly supported higher education in Missouri (**209,** 1930) it was found that the basis of the appropriation of funds to the State University is so detailed that it interferes with the effectiveness of the operation of that institution.

The preparation and internal control of the budget varies widely among institutions. Klein (**204,** 1930) published a study showing that in the land-grant colleges the budget estimates are made by the chief business officer in twenty-six institutions, by the president in six institutions, and by other officers in ten institutions. In seventeen of these institutions the deans submit their budget estimates directly to business officers, and in twenty cases directly to the president.

Property insurance—Klein (**204,** 1930) reports that although all but six of the fifty-two land-grant colleges for white students carry some property insurance, in nine of these institutions, where data were compiled over a period of years, losses totaled $382,688, and total premiums paid out for insurance amounted to $433,366. Carruthers (**189,** 1926) likewise found that during a period of years Harvard, Yale, and the University of Pennsylvania combined paid three-quarters of a million dollars for insurance, and received for property losses only fifteen thousand dollars. In fifty-four institutions of higher learning over this same period (**189,** 1926) the ratio of recovery from insurance to loss was 76 percent; the ratio of premiums paid to loss was 191 percent; and the ratio of premiums paid to recovery was 255 percent. It appears that a major reason for the unsatisfactory insurance rates received by institutions of higher learning is that such institutions are classed along with churches and buildings for the lower schools, where dangers of fire losses are much greater. This situation could be remedied by a separate classification for colleges and universities.

Summary and recommendations on business management—There is great lack of uniformity among institutions in the organization set up for business management. The most satisfactory form of organization appears to be that in which all business activities are centralized in a business manager responsible to the president, and through the president to the board of control. There is need for improvement in accounting procedures in order that more satisfactory budget methods may be employed, and that officers may know the extent to which supplementary business activities are being maintained without deficits. The classification for insurance purposes of college and university plants needs to be changed in order that more satisfactory rates may be obtained.

Income

Relation of income to ability to support education—Studies of this problem are of general interest primarily because of the technics employed. Reeves *et al.* (**228,** 1926) sought particularly to determine whether or not Indiana was lagging behind neighboring states in the support of higher education. It was found that taxes received by Indiana in 1925 amounted to 10.9 percent of the total taxes received by seven north central states. Of that part of the total taxes of these states which was devoted to public universities and colleges, however, only 7.3 percent was for such institutions in Indiana; and of that part of the total taxes devoted to public normal schools and teachers colleges, only 7.5 percent was for such institutions in Indiana. Using a similar technic, La Poe (**205,** 1929) found that the amount which Pennsylvania contributed to state institutions of higher education was less than one-fifth as great as that contributed by Illinois and Ohio, in proportion to ability. O'Shea (**215,** 1928) reported that Virginia, in 1922-23, had 1.55 percent of the national wealth of the country and contributed to higher education 1.57 percent of the total contribution of the country as a whole.

In discussing the ability of states to support public education, a *Research Bulletin* of the National Education Association (**213,** 1927) listed the amounts spent for higher education by the individual states and compared these amounts with the total taxes collected. For the country as a whole, in 1924, 8.05 percent of all state and local taxes went for the support of higher education, and 4.80 percent of all federal, state, and local taxes was devoted to the same purpose. Virginia led all other states in regard to the proportion of tax money spent for higher education. She devoted 17.56 percent of all state and local taxes for this cause, while New Jersey spent only 2.57 percent.

Recent increases in income—Studies by Phillips (**217,** 1927), Klein (**204,** 1930), Black (**187,** 1928), and Morey (**210,** 1930) showed large increases in the absolute incomes of institutions of higher learning during recent years. The total receipts of 913 universities, colleges, and professional schools in the United States in 1924 were $388,000,000, while those for 975 institutions in 1926 were $480,000,000 (**217,** 1927). During the thirteen-year period from 1915 to 1928 the total income of fifty-two land-grant colleges for white students increased 310 percent (**204,** 1930), while during the ten-year period from 1918 to 1928 the income for operation and maintenance of seventeen negro land-grant colleges increased 112 percent (**204,** 1930). The average income of teacher-training institutions in the United States increased from $36,000 in 1906 to $117,000 in 1926 (**187,** 1928). The total of government grants to British institutions of higher learning increased 20 percent from 1924 to 1928 (**210,** 1930). A survey of higher education in Missouri (**209,**

1930) showed that the student per capita receipts of all public and private universities, colleges, and professional schools (exclusive of teachers colleges) in Missouri in 1925-26 were sufficient in buying power to purchase 104 percent more than the receipts of the same institution eight years earlier.

Sources of revenue—Phillips (**217,** 1927) analyzed the sources of revenue of 975 universities, colleges, and professional schools in 1926. Private gifts constituted the most important source, with student fees second, and state and city governments third. Whitney (**240,** 1929) found, however, that in the case of state teacher-training institutions, from 75 to 80 percent of the income is derived from state sources; the remainder comes almost entirely from student fees. Only fourteen of these institutions receive proceeds from a mill levy, and of these fourteen, nine are located in one state.

Strickland (**234,** 1926) obtained data showing the advantages and disadvantages of a millage tax. The advantages of the millage tax are that (a) it gives a basis for planning ahead over a considerable period of time; (b) it enables uniform development, since the support increases as the wealth of the state grows; (c) it frees the institution somewhat from legislative control. The disadvantages are (a) assessed valuations fluctuate; (b) enrolment often increases more rapidly than assessed valuations; (c) with the shifting of property valuations such a tax may no longer be an adequate source of support; (d) the millage tax frequently increases the burden of a particular class of taxpayer which in most instances is already overburdened.

Percentage distribution of receipts—Table 1 presents data showing on a percentage basis the distribution of income from certain specified sources in eight groups of institutions of higher education. In some cases the data are not strictly comparable because of differences among institutions in the classification of sources of income.

Arnett (**185,** 1927) found that only 8 percent of the students attending institutions of higher learning in the United States pay as much as one-half of the cost of their education. He arrived at the conclusion that students should be required to pay a much larger percentage of the cost of education than that which they now pay.

Income per student—In a study of the revenues of sixty-two four-year teachers colleges and fifty-two two-year normal schools located in twenty-nine states, Whitney and Condit (**240,** 1929) found a median income per student of $330 with a range of from $100 to $950 for the normal schools, and a median of $280 with a range of from $150 to $784 for the teachers colleges. The figures include funds intended for capital outlay as well as for current expenditures. It is interesting to note that the income per student received by the two-year institutions was $50 greater than that for the four-year institutions. O'Shea (**215,** 1928)

TABLE 1. DISTRIBUTION OF SOURCES OF INCOME ON A PERCENTAGE BASIS.

Study			Percentage of income from various sources					
			Taxes					
Author	Reference	Institutions included	Federal	State and local	Gifts, including church contributions	Student fees	Endowments	Miscellaneous sources
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Arnett	(185)	Nation-wide study	5.0	28.0	5.0	31.0	15.0	16.0
Greenleaf	(197)	853 private institutions	.1	2.0	20.0	35.0	18.0	25.0
Greenleaf	(197)	228 public institutions	8.1	53.8	2.7	12.9	2.8	19.7
Harmon	(201)	Endowed institutions in U. S.	.....	3.0	20.0	41.0	22.0	14.0
Klein	(204)	White land-grant colleges	9.5	50.0	5.2	10.8	12.1	12.4
Klein	(204)	Negro land-grant colleges	11.1	45.2	4.2	5.6	26.7	7.2
Morey	(210)	Universities of Great Britain	37.0	10.0	.....	30.0	16.0	7.0
O'Shea	(215)	All public institutions in Virginia	.....	59.3	.....	30.4	10.3	.....
O'Shea	(215)	Public institutions in U. S.	.....	77.7	.....	18.2	4.1	.....
Reeves *et al*	(226)	34 Methodist colleges	.....	.....	6.0	56.0	22.0	16.0
Reeves	(223)	17 liberal arts colleges	.....	.....	.....	64.0	25.0	11.0

compared the contributions which the state of Virginia made to higher education with those for other states. Whereas Virginia contributed only $277 per student, the average for all other states amounted to $343 per student. During the biennial period 1925-26 the student per capita receipts of institutions in Missouri (**209,** 1930) were $460 for the universities, colleges, and professional schools exclusive of the teachers colleges; $566 for the publicly controlled universities, colleges, and professional schools; $423 for the privately controlled universities, colleges, and professional schools; $149 for the teachers colleges; and $351 for all institutions combined.

Three studies are reported which deal entirely with endowed colleges. Reeves and Russell (**231,** 1928) studied the income per student for a group of twenty-nine liberal arts colleges of various denominations. It was found that these institutions receive an average income of $98 per student from endowment, $163 per student from student fees, and $101 per student from all sources except student fees. In thirty-four Methodist colleges (**226,** 1932), income per student averages $167 from student fees, $62 from endowment and pledges, $6 from financial campaigns and miscellaneous gifts, $12 from the Methodist Board of Education, $3 from surplus on supplementary business activities, and $4 from miscellaneous sources. The larger institutions receive more than the smaller ones from both student fees and endowment, while the smaller institutions receive more than the larger ones from church sources. In a study of thirty-two endowed colleges, Reeves (**228,** 1928) found that the average income per student received from endowment in institutions with fewer than three hundred fifty students is more than twice as large as the average received from endowment in institutions with five hundred or more students enrolled.

Summary statement—More funds are devoted to higher education in the United States than in European countries. During recent years the incomes of American institutions have increased rapidly. The major sources of income are philanthropy, the student, and state and municipal governments. When the incomes of colleges and universities are related to the number of students enrolled, large variations are found to exist among institutions and also among types of institutions.

Allocation of Expenditures on a Percentage Basis

Thirteen studies provide data relating to the distribution of expenditures by function. The findings of these studies are summarized in Table 2. It is suggested (**220,** 1929) that a figure of 70 percent should be set as the most desirable proportion of educational expenditures to be devoted to instruction.

Conflicting conclusions result from three studies dealing with the problem of the relation of functional allocation of expenditures to institutional enrolment. In two extensive studies of liberal arts colleges,

Table 2. Classification of Expenditures

Study			Percentage distribution of expenditures			
Author	Reference	Institutions included	Administration	Instruction	Operation and maintenance	Miscellaneous
(1)	(2)	(3)	(4)	(5)	(6)	(7)
United States Bureau of Education	(238)	123 public teachers colleges	7.4	58.4	27.2	7.1
Educational Survey of Pennsylvania	(216)	13 state normal schools	9.5	46.8	30.8	12.9
Educational Survey in Missouri	(209)	5 teachers colleges	6.3	61.3	23.1	9.3
Leonard	(206)	10 Lutheran colleges	.....	64.3	.....	.....
Klein	(204)	White land-grant colleges	6.8	50.3	11.0	31.9
Klein	(204)	Negro land-grant colleges	15.3	55.6	26.9	2.2
Magee	(208)	16 teacher-training institutions	.....	80.0	.....	.....
Morey	(210)	Universities in Great Britain	8.0	68.0	11.0	13.0
Reeves	(225)	32 liberal arts colleges	.....	59.0	.....	.....
Reeves and Russell	(220)	10 Disciples colleges	19.0	67.0	13.0	.....
Reeves and Others	(227)	5 Baptist colleges	17.8	67.0	8.0	6.2
Reeves and Others	(226)	34 Methodist colleges	14.0	68.0	13.0	5.0
University of the State of New York	(214)	Higher institutions in New York	12.1	61.4	13.9	12.6

Reeves (**229,** 1928 and **222,** 1928) concluded that the size of an institution has little effect upon the percentage of current educational expenditure used for instructional salaries. He pointed out that some of the smaller colleges expend only 50 percent of their funds for instructional salaries, while others expend more than 70 percent for this purpose. A similar range was found among the larger institutions. In contrast with this conclusion, it was found that in a group of thirty-four Methodist colleges (**226,** 1932) the size of the institution is associated with percentage of total expenditures devoted to each of several functions. The larger colleges tend to devote a larger percentage of their funds to instruction and to student welfare, while the smaller colleges devote a larger percentage to administration. Russell (**232,** 1931) reported that the correlation between the percentage of total educational expenditures devoted to administration, and institutional enrolment is –.60. The correlation between the percentages of expenditures allocated to plant operation and maintenance and institutional enrolment is practically 0.

Unit Costs

The computation of unit costs of higher education has developed in the last two decades, the more important studies having been made since 1924. During the past seven years a variety of technics have been employed in making cost studies. The units used most frequently are cost per student, cost per student-credit-hour, and cost per student-clock-hour. These units have been employed to show total costs, current costs, instructional costs, salary costs, and costs for instructional supplies and equipment.

Total and current costs per student—For the purpose of comparison, either among institutions, or among major divisions within an institution, it is necessary to reduce expenditures to a unit basis. Cost per student is the unit most frequently employed for this purpose. In a study made from data for 1928 Franke (**194,** 1929) obtained an average total cost per student for eighty-one thousand students enrolled in seventy-four institutions of higher learning. Phillips (**218,** 1927) compiled data showing the current expenditures per student in ninety teachers colleges and ninety-three state normal schools for the year 1925-26. In some institutions it was necessary to include the expenditures incurred in the operation of dormitories, because it was not possible to exclude such items.

Other important studies of costs per student made recently in state-supported institutions are those by the United States Office of Education (**237,** 1931) for all of the state-supported institutions of higher learning in the United States; by the Division of Field Studies of Teachers College, Columbia University (**209,** 1930), for the state institutions in Missouri; by O'Shea (**215,** 1928) for the state institutions

of Virginia; and by Bennett (**186,** 1929) for the Oklahoma Agricultural and Mechanical College. Humke (**202,** 1931) made a comparative study of costs per student in 1928-29 in eighteen private and church colleges and ten state institutions which train teachers, using the student year as the unit for his study. The student year cost was found by dividing the current educational cost (instructional salaries and supplies, administration, and library) by the index of attendance (total number of students enrolled in the regular academic year plus one-fourth the number enrolled in the summer session).

Several studies of cost per student in liberal arts colleges have been made by Reeves (**229,** 1928 and **222,** 1928), Reeves and Russell (**221,** 1929; **220,** 1929; and **231,** 1928), and Reeves *et al.* (**226,** 1932). A summary of the results of these studies is presented in Table 3.

Costs per student classified by curriculums—Magee (**208,** 1931) found that the average annual costs for college instruction in teacher-training institutions are ordinarily lower for curriculums three or four years in length than they are for curriculums two years in length. Bennett (**186,** 1929) and Stevens and Elliott (**233,** 1925) found wide variations in costs by curriculums in state institutions of higher learning.

Costs per student classified by function—Two studies were reported by Reeves (**226,** 1932; and **221,** 1929) in which costs per student were classified by type and function. The types of cost used in these analyses were educational expenditures, non-educational expenditures, total expenditures, and economic costs. The educational expenditures were broken up into the following functions: administration, instructional salaries, instructional supplies, library, operation and maintenance of the plant, commencement and public occasions, and student welfare. The non-educational expenditures comprised scholarships and remitted fees, expenses of financial promotion, losses on supplementary business enterprises, interest on indebtedness, publicity, and pensions paid from current funds. Economic cost included interest and depreciation on the plant and investments. It was computed on the original cost of buildings and equipment, or appraisal values if the original cost figures could not be determined, at the rate of 5 percent for interest and 3 percent for depreciation. The unit on which these costs were computed was the student enrolled. The total expenditures for the regular academic year was divided by the average enrolment of full-time students for the two semesters or three terms of the regular nine months' academic year.

Student-hour costs—Two general plans have been used for the computation of student-hour costs. These are the student-credit-hour and the student-clock-hour. A student-credit-hour represents one student under instruction for a period of time for which one hour of credit is received. A student-clock-hour represents an hour of instruction for one

TABLE 3. COSTS PER STUDENT IN INSTITUTIONS OF HIGHER EDUCATION

Study				Cost per student	Type of expenditure*
Author	Reference	Institutions included	Date		
(1)	(2)	(3)	(4)	(5)	(6)
United States Office of Education...	(237)	Oregon University, State College and 3 state teachers colleges	1928	$276.99	C.E.E.
		State institutions, 17 states	1928	214.92	C.E.E.
Columbia University Survey	(209)	University of Missouri	1920–1929	387.14	C.E.E.
		5 state teachers colleges in Missouri	1920–1929	214.42	C.E.E.
Bennett	(186)	Oklahoma A. and M. College	1929	285.00	T.C.
Franke	(194)	74 institutions in the United States	1928	609.66	
Humke	(202)	18 private colleges and universities	1929	190.00	C.E.E.
		7 state teachers colleges	1929	145.00	C.E.E.
Humke	(202)	10 state controlled institutions	1929	336.00	C.E.E.
Phillips	(219)	117 teachers colleges	1928	120.00–746.00	
Phillips	(219)	55 state normal schools	1928	90.00–646.00	T.C.
Reeves	(220)	32 liberal arts colleges	1924–1927	266.00	C.E.E.
Reeves	(222)	16 liberal arts colleges	1926	265.00	C.E.E.
Reeves and Russell	(220)	13 liberal arts colleges	1924–1927	273.00	C.E.E.
Reeves and Others	(227)	5 Baptist colleges	1928	139.00	C.E.E.
Reeves and Russell	(231)	29 liberal arts colleges	1926	265.00	C.E.E.
Reeves *et al*	(226)	34 Methodist colleges	1930	336.00	T.C.
University of State of New York	(214)	All higher institutions in New York state	1929	434.30	C.E.E.

* T.C., total cost. C.E.E., current educational expenditure.

student in lecture, recitation, laboratory, or conference. Within the past three years extensive studies have been made in which the student-credit-hour has been employed as the unit of measurement (**221,** 1929; **226,** 1932; and **208,** 1931).

Two of the most significant studies which have employed the student-clock-hour as a measure of costs are those by Stevens and Elliott (**233,** 1925) and Bennett (**186,** 1929). Stevens and Elliott stated that the purpose of their study was to develop a simple, common method of calculating the annual cost per student in higher institutions. Two major technics were employed for the distribution of overhead. Certain items were distributed on the basis of physical plant space used. Others were distributed on the basis of student-clock-hours of instruction. The report presented data relating to student-clock-hour costs by departments and by institutions, curricular costs by colleges and by institutions, trends in unit costs over a period of years, and summaries of costs by source of revenue. The authors found that unit costs for the same kinds of work in different institutions tended toward similar levels. It also was reported that the unit costs in curriculums and departments with small enrolments usually tended to be high.

Bennett's study (**186,** 1929) was made as a part of a report of the Oklahoma Agricultural and Mechanical College to the governing board of that institution. The procedures used were essentially those followed by Stevens and Elliott with some modifications to meet local conditions. The chief difference in technic between this study and that by Stevens and Elliott is that Bennett computed costs for individual courses offered, while Stevens and Elliott found costs by departments but not by individual courses. The cost of technological subjects was found to be higher than for arts and science subjects and for such professional subjects as law and education.

Magee (**208,** 1931) sought to determine which of the two units, the student-credit-hour or the student-clock-hour, is the best for comparative cost studies in teacher-training institutions. He concluded that the student-credit-hour is preferable as the basic unit of measurement. Lindsay (**207,** 1924) studied the same problem from data obtained from the University of Washington and the State College of Washington. His findings agreed with those of Magee that the student-credit-hour is preferable to the student-clock-hour.

A study of unit costs at the University of California (**188,** 1931) employed the student-credit-hour technic, computing costs on two bases, the enrolment hour and the unit of credit granted. Both departmental costs and teaching costs were computed. Teaching costs were found to be more accurate than departmental costs, and departmental costs more accurate than total costs.

One of the important uses of student-credit-hour cost data is in the preparation of the budget. Department heads should be provided with data showing the instructional salary costs per student-credit-hour in their own departments and in other divisions of the institution. Requests for budget increases can then be viewed in the light of the entire financial situation. All of these studies lead to the conclusion that admintrative attempts to equalize costs per student-credit-hour among subjects must be made cautiously, and in accordance with the institution's own philosophical evaluation of the relative worth to the subjects in the program which the institution is attempting to offer. Certainly no course or subject should be eliminated from the offerings of an institution on the basis of cost alone.

Other cost units—In a survey of higher institutions of education in Texas, Works *et al.* (**241,** 1925) employed a general cost figure representing the cost per month to the state of a single student in various institutions. In a cost survey of the library of the University of California, Hand (**200,** 1930) arrived at costs for the following services: cataloging, recataloging, bookbinding, and issuing books from the loan desk. Efforts to compute the cost of acquiring a book for the library led to unsatisfactory results because of the complex interrelation of the processes involved.

Relation of cost to size of institution—Eight studies throwing light upon the problem of the relation of costs to the size of educational institutions are reported. Phillips (**218,** 1927) obtained data for 1925-26 from 90 teachers colleges and 93 state normal schools, and for 1927-28 (**219,** 1929) for 117 state teachers colleges and 55 state normal schools. In general, the findings of these two studies were similar, for the smaller institutions in both cases have the higher costs. Reeves (**230,** 1927 and **224,** 1927) reported a similar finding in four-year colleges of liberal arts. Later studies by Reeves and Russell (**221,** 1929 and **220,** 1929) and by the California Taxpayers' Association (**188,** 1931) also resulted in similar findings. Reeves and Russell (**220,** 1929) found that institutions with less than 350 students cost approximately 1.5 times as much per student as institutions with 750 or more students enroled. The California Taxpayers' Association suggested that consideration be given to a policy of having a small number of large colleges, rather than a large number of small colleges.

The only study on the relation of cost to the size of institutions in which the findings are contradictory to those reported above is a study made by Magee (**208,** 1931) which includes sixteen teacher-training institutions. Magee concluded that there is as much probability in a teacher-training institution that a standard credit cost will increase as that it will decrease with an increase in enrolment. An explanation of Magee's findings will be seen in the fact that the larger institutions

included in his study were teachers colleges while the smaller ones were normal schools. This particular group of teachers colleges had expanded their educational programs and were offering more curriculums than were the normal schools. With the addition of many different curriculums there is a tendency to increase the number of small classes. Because of the relatively high cost of small classes, the teachers colleges, although having larger enrolments than the normal schools, had higher unit costs for instruction.

Relation of cost to classification of students—Two studies throw light upon this problem. Magee (**208,** 1931) found that the mean standard credit cost was lowest in the freshman year and that it tended to increase with each year thereafter. Reeves (**230,** 1927) carried on an investigation to determine the comparative cost of education at the junior and senior college levels of four-year colleges of liberal arts. For the nine institutions included in this study it was found that instructional salary expenditure per student average $109 for the junior college division and $190 for the senior college division, and that current expenditure per student was $201 at the junior college level, and $315 at the senior college level.

Ineffective expenditures—Russell (**232**) recently made a study to develop and illustrate a technic for the determination of the amount of annual waste in a college due to inefficient management, and the amount of actual effective expenditures after the costs of inefficient administration and management have been eliminated. Specific data were drawn from thirty-nine colleges surveyed during the years 1929, 1930, and 1931. The technic developed in this study is based on the theory that the college having a satisfactory performance of a given function, such as administration at the lowest cost per student, should be taken as a standard. Institutions which are spending more than this amount per student are wasting the excess expenditure because it does not purchase any better service. The technic was carried through to show, in an illustrative manner, the amount of annual non-effective expenditure in thirty-four colleges.

Summary and conclusions—The computation of unit costs of higher education has developed in the last two decades, the more important studies having been made since 1924. Satisfactory results can be secured only when institutions have adequate systems of cost accounting. The units most frequently used as the divisor are the student, the student-clock-hour, and the student-credit-hour. Those who use the student-credit-hour in preference to the student-clock-hour as a measure of student cost base their arguments on the fact that the student-credit-hour is the unit more closely related to the product of college education, which is usually designated in terms of credit. This argument appears

to be valid for institutions which measure student progress in terms of the number of credits earned.

Cost studies are of distinct value in giving important information to administrative officers, faculty members, taxpayers, legislators, and other interested parties. The facts revealed by such studies frequently enable institutions to effect economies in the institutional program, and to better defend requests for appropriations. The future of unit-cost studies is complicated somewhat by the present drift away from formal courses and credits and the consequent lessening of the emphasis on the quantitative aspects of units now generally employed.

The Students' Relation to College Finance

Student tuition and fees—Anderson (**183,** 1929) in a study of student tuitions and fees in 271 endowed colleges and universities, found that in general the tuition fees are higher in the independent institutions than in denominational colleges. The highest fees are charged in institutions in New England and the lowest in institutions in the Southern States. Chassee (**191,** 1926) reported data for all institutions of higher learning in the United States for 1921-22, and estimates for 1924-25. He estimated that the student in 1923-24 paid 23 percent of the cost of education, society paid 31 percent, and philanthropy paid 46 percent. He recommended that the individual should bear one-half the cost of education, and society and philanthropy should divide the other half of the cost equally.

Morey (**210,** 1930) made a study of student fees in European institutions. He found that at Oxford and Cambridge the student pays about $400 per year in fees of various kinds; at the University of Berlin, from $37.50 to $150 in general fees, and from $35 to $75 in course fees. At the University of Paris, fees are lower than those at British or German institutions.

Increases in student tuitions and fees—During recent years marked increases have occurred in the fees paid by students in institutions of higher learning. Klein (**204,** 1930) pointed out that the tuition fees charged resident students in forty-four land-grant colleges increased at least 100 percent from 1915 to 1928. In a study of 109 privately controlled and forty-seven publicly controlled colleges Cowen (**192,** 1930) found that student fees have tended to increase more rapidly than income from other sources. In public institutions student fees in 1910 constituted 11 percent of the current income, while in 1926 fees constituted over 14 percent of the current income. In private institutions student fees in 1910 constituted 41 percent of the current income, and in 1926, 49 percent of the current income. Frasier and Whitney (**195,** 1930) found that student fees in teacher-training institutions increased 48.6 percent from 1913 to 1928. Tuition fees in state teacher-training

institutions constituted 14.2 percent of the total income in 1894, 17.3 percent in 1910, and 19.3 percent in 1928.

Scholarships—Thurber (**235,** 1925) presented data showing that scholarships in state universities are usually awarded on four distinct bases: (a) accredited high-school graduates of high rank; (b) distributive scholarships giving each county or unit of the state a proportionate number without regard to need or scholastic rank; (c) beneficiary scholarships for capable and worthy but needy students; (d) scholarships for those preparing for specific lines of work or professions. In the survey of Methodist colleges (**226,** 1932) it is reported that the two sources of funds frequently employed for the payment of scholarship grants are endowed funds and the current budget of the institution. Eight of the thirty-five colleges included in the study have no endowment especially designated for scholarships. Of those having endowment for this purpose the range in the total endowed scholarship funds is from $2,500 to $2,343,000, the median institution having a fund of approximately $25,000. The amounts of endowed scholarship funds per student enrolled in those institutions having such funds range from $13 to $1,620, with a median of $57.

Student loans—Important studies of student loans have been made by Greenleaf (**198,** 1929), Leonard *et al.* (**206,** 1929), Reeves *et al.* (**226,** 1932), and Chassee (**191,** 1926). Several hundred schools are included in these studies. There seems to be no such thing as a uniform policy in regard to the manner in which loan funds are handled. Interest rates range from 0 up to 8 percent. The average size of the loans varies from $25 to as high as $1,000. There are several special student loan funds which may be applied in helping students in more than one particular institution. Among the more important of these funds are the Crawford Fund, the Harmon Foundation Fund, the Barrett Foundation Fund, the Knights Templar's Fund, and special funds to be used in practically all of the more important denominational groups. There are also several funds to be used for particular purposes or in a particular field of education (**198,** 1929). In terms of actual money available for distribution, funds of the restricted type are at least four times as large as are those of the revolving type (**191,** 1926). Although this is true, the revolving fund is much to be preferred to the restricted fund, since in the latter, interest on the principal only can be used for loans. A fund of the revolving type will accommodate many more students than a fund of the same size of the restricted type. Chassee (**191,** 1926) recommended that security for student loans should not be required beyond the student's personal note and the guarantee of a group of students. It was also recommended that the instalment method be employed in the repayment of loans. Collection systems which have a consistent

and vigorous follow-up policy are highly essential to the successful administration of a student loan fund.

Student employment—Although in theory the employment of students differs materially from other forms of student aid, in practice the prospect of obtaining remunerative work frequently makes it possible for a student of limited means to attempt the financing of a college year in much the same way as a scholarship or loan. There is considerable variation among institutions in the amount which they expend for student employment. The survey of Methodist colleges (**226,** 1932) reports that the range in the total amounts expended for student employment is from $2,500 to $26,000, with a median of $8,000.

Summary statement—During recent years large increases have been made in student tuitions and fees, with the result that students now pay a much larger percentage of the cost of their education than was true a few years ago. Some types of education are subsidized to a much greater degree than others. The forms of aid most frequently provided for students without adequate means to finance their education include scholarships, loans, and student employment.

Permanent Funds

Endowment investments—The investment of endowment funds was studied by Reeves *et al.* (**226,** 1932) and Klein (**204,** 1930). In a report on thirty-five Methodist colleges (**226,** 1932) it was found that the total of invested funds of these institutions amounted to thirty-seven and one-half million dollars, of which 84 percent was permanent endowment. The range in the amount of trust funds held by these institutions was from five and one-half million dollars down to less than one-seventh of a million dollars. The rates of income on investment in thirty-three of these institutions for a period of from four to six years prior to 1931 ranged from less than 2.5 percent in three institutions to 6 percent or more in five institutions, the median institution receiving slightly more than 4.5 percent. The low rates received by some colleges were occasioned by unsatisfactory types of investment. After subtracting indebtedness from endowment, the average net endowment per student in the Methodist colleges was $1,344.

Klein (**204,** 1930) found that the type of endowment investments of land-grant colleges was usually long-time securities. These securities included United States government bonds, municipal bonds, federal and state bonds, first mortgages and real estate bonds, county bonds, and school district bonds. Investments in real estate by the land-grant colleges were comparatively small.

Management of invested funds—In a survey of thirty-five Methodist colleges (**226,** 1932) three types of organization were found for the management of invested funds. These types are (a) the investment

of funds under the direction of a committee of the board; (b) the investment of funds under the administration of some one individual, such as the business officer of the college; and (c) the investment of funds through a corporate trustee. As judged by the average rate of income received on invested funds, the placing of investments completely in charge of a corporate trustee or the management of the funds by a board committee with the advice of an investment council is found to be the most satisfactory.

Klein (**204,** 1930) reported that the control of trust funds in land-grant colleges is vested in governing boards in twenty-one institutions, in state governments in ten, in a committee of the governing board in twelve, in the chief business officer with the approval of the board in five, in the board of trustees in one, in the state treasurer in six, in the state legislature in two, in the commissioner of schools and public lands in one, and in the state superintendent of public investments in one.

Relation of endowment income to other factors—Reeves (**225,** 1928) studied the relationship of income received from endowment and from other sources to current expenditures and to faculty salaries. He found no marked relationship between total endowment income and current expenditure per student. There is also no marked relationship between income per student received from all sources except student tuitions and fees, and current expenditure per student, when the effect of the size of the institution is taken into account. Some positive relationship exists between total endowment income and average faculty salary. The conclusion was reached that the relationships between endowment income, or income from sources other than students, and factors such as cost per student and average salary of teachers do not warrant further increases in the requirements of standardizing agencies with respect to income from sources other than tuition.

Summary statement—Average rates received by institutions on invested funds range from 2.5 percent to more than 6 percent. The low rates received by many colleges are due to unsatisfactory types of investment and poor management. Because of the lack of a close relationship between endowment income and other factors essential to an effective educational program, accrediting agencies should not increase further their endowment requirements.

CHAPTER VII

Fiscal Control and Textbooks in Business Management of Schools

DURING the last decade, the literature on the business management of schools has grown by leaps and bounds. This development has no doubt been stimulated by the rapidly mounting school costs, by a growing insistence on the part of the public that waste be eliminated before more money is granted, and by the rapid emergence of school administration as a profession. This literature contains hundreds of magazine and newspaper articles, scores of bulletins and monographs, and dozens of books. It is the purpose of this chapter to review that literature with respect to (a) fiscal control, and (b) financial economies.

Much of the literature on the topics just mentioned is original, practical, scholarly, and permanent. At the same time, much of it is trite, unscholarly, and ephemeral; space will not permit a review of this. Much of it, too, does not fall under the category of research, and with the exception of calling attention to the general textbooks, we shall not take note of the non-research literature. We shall attempt to do as we have been instructed to do, namely, to review within the page limits set, only the *important literature* on the two topics mentioned above.

Textbooks on Business Management

Because they contain bibliographies on the subject and take cognizance of the research which has been completed on the subject, attention should be called to the four general textbooks on business management of schools.

Engelhardt and Engelhardt's *Public School Business Administration* (**244,** 1927) was the first of these to appear. It is the most comprehensive of the four books, containing thirty-five chapters on the more important phases of the subject.

Reeder's *The Business Administration of a School System* (**251,** 1929), and Smith's *Business Administration of Public Schools* (**254,** 1929), are somewhat similar in size and content. They do not contain nearly as much illustrative material as the Engelhardt and Engelhardt book, but the bibliographies are more complete.

Engelhardt and Alexander's *School Finance and Business Management Problems* (**243,** 1928) is, as the name suggests, essentially

a problem book. It contains 112 live problems on school finance and school business administration which confront the school executive.

Fiscal Control

Fiscal independence versus fiscal dependence—Whether the board of education should entirely control the raising and disbursing of moneys for the schools, or whether a portion of this prerogative should be assigned to the mayor, council, budget commission, or another agency, has been a much discussed question in school administration. In other words, the question has been, and still *is*—it has not yet been finally answered: Should the board of education be fiscally independent or fiscally dependent?

The question has been attacked in two Ph.D. dissertations, i.e., Frasier's (**246,** 1922), and McGaughy's (**250,** 1924). Both dissertations compared fiscally independent and fiscally dependent cities. Frasier's study was primarily concerned with educational results in the two types of cities, while McGaughy's study emphasized amount of expenditures and other financial practices in the two types of cities.

Frasier's study (**246,** 1922) included 169 cities of more than 8,000 population for which he could secure the data that he needed. These cities were classified into nine groups based upon the type of fiscal control exercised by the board of education; the type of fiscal control ranged from elected boards, fiscally independent, to appointed boards, fiscally dependent. The study then compared educational results in the nine groups of cities; for this purpose an index number, on the basis of six factors, was constructed for each city. It was found that the fiscally independent cities ranked higher than the fiscally dependent.

McGaughy's study (**250,** 1924) included 377 cities of more than 8,000 population for which the data needed were available. He classified these cities into three groups: independent, dependent, and special. For the three groups of cities he undertook to answer the following questions:

(1) Do the dependent or independent boards receive a larger proportion of their total revenues from local taxation?
(2) Do cities having independent boards of education have higher tax rates for school purposes, or for all municipal purposes?
(3) Are dependent boards of education more inclined to incur bonded indebtedness for school purposes?
(4) Which type of board expends more money upon its school system, or upon the various items which make up the total expense for the schools?

McGaughy reported nineteen items on which there were significant differences between independent and dependent school systems. The independent cities had the advantage in thirteen of the nineteen items. The critical ratio was used to measure the significance of the differences

between the averages of two comparable distributions of data. In this connection see Chapter V of this issue of the *Review*.

Unit versus multiple control—Whether there should be unit or multiple control of the schools has been another much debated question in school administration. Three studies, all of them Ph.D dissertations, have recently been published on this question. They are, in order of appearance, Smith's *The Business Administration of a City School System* (**253**, 1925), Heer's *The Present Status of Business Executives in the Public Schools of the United States in Cities of 25,000 and More Inhabitants* (**247**, 1928), and Marberry's *The Administration of Public Education in Centralized and Coordinated Schools* (**249**, 1928). Smith's and Marberry's studies are entirely on unit versus control, and Heer's is partly on the topic.

The three studies define unit control and multiple control similarly. Marberry's study, however, uses the term *centralized control* instead of *unit control*, and *coordinated control* instead of *multiple control*. Smith's definitions of the two types of control are typical and are here quoted (**253**: 4, 1925)[1]:

> The unit type of city is one in which the administration of a city school system is vested in one chief executive officer known as the superintendent of schools. . . .
>
> The multiple type of city is one in which the administration of a city school system is vested in two, or more, coordinate executive officers each responsible directly to the board of education. . . .

From an intensive study of typical school business activities in twenty-five New York and New Jersey cities, Smith found "that business activities are carried on in much the same manner whether the city is of the unit or of the multiple type (**253**: 92, 1925). From a study of school costs in the larger cities, he found "that the type of educational administrative organization has no appreciable effect on the total current expenditures and affects only the one functional division of current expense (business control) in any significant manner." Furthermore, "a careful analysis of data secured from twenty-three multiple type cities seems to indicate that, regardless of the personnel involved, an educational point of view is frequently lacking in the administration of school business affairs, and there is a division of administrative responsibility" (**253**: 92-3, 1925).

Heer's study (**247**, 1928) was concerned primarily with the status of the business executive in cities of the United States having 25,000 or more inhabitants. In it, such matters as the following, which pertain to the position, are discussed: legal status, salary, method of selection, term and tenure, qualifications, and functions.

[1] The light-face figure immediately following the colon indicates the specific pages. For example, in this case read: "Reference No. 253, page 4, published in 1925."

Comparing the business functions performed in the unit and the multiple types of organization, Heer found the following:

> (1) As a whole, there are very few significant differences between the unit-chief-executive and the dual types of organization (1) in the number of times the functions are performed, and (2) in the manner in which the execution of the functions is initiated. (2) There are a considerable number of functions assigned to business departments in dual organizations, which functions are essentially educational. . . . (247: 129-30, 1928).

Marberry's study (**249,** 1928) undertook to measure the efficacy of the unit versus the multiple types of control by two sets of data. In the first set of data an index number on school efficiency was computed for the 140 centralized and 66 coordinated school systems used in the study. In this index number four financial factors and four educational factors were used (**249:** 49, 1928). It was found, however, that "The application of the index number . . . reveals but one outstanding, significant fact. The fifth factor, the amount spent per pupil in average daily attendance on the basis of current expenses, is definitely in favor of the coordinated schools" (**249:** 93-4, 1928).

The second set of data which Marberry employed showed an entirely different situation. These data were concerned with the functions of school administration. "This measure was applied to the two groups of schools on the assumption that the superintendent of schools should initiate or execute these functions (**249:** 95, 1928). Ten of these functions were used and the critical ratio was computed for each function.

Miscellaneous—Brunstetter (**242,** 1931) analyzed business procedures in different sized school systems and developed standards and procedures especially adapted for the smaller systems. Three large, three medium-sized, and three small school systems in New Jersey were included in the analysis. The following criteria were used in checking the business procedures: timeliness, economy, comprehensiveness, educational emphasis, system, standardization, data control, safeguards, specialization, proper working conditions, flexibility, and law observance (**242:** 122-23, 1931).

Linn analyzed the ways in which school funds are being lost or misused, to discover basic means of safeguarding such funds (**248,** 1929).

Young (**256,** 1928) investigated certain phases of income control in the public-school systems of the cities and larger villages of New York state. He attempted to discover the following (**256:** 3-4, 1928): "(a) the types of revenue control which are operating within the state; (b) the effectiveness of present local budgetary control; (c) the extent to which public-school moneys become available as needed; (d) the controls which are now affecting the timely receipt of public-school income; (e) the adjustments which are made when school revenues are not received as needed; and (f) how moneys received in advance of need are being administered."

Yakel (255, 1929) undertook to ascertain the most desirable legal controls for the administration of public-school expenditures. The specific problems which he attacked were the following:

(1) To determine what legal control is at present exercised over the administration of public-school expenditures.
(2) To isolate and reveal some of the most important legal principles which have been evolved by the courts and the legislatures for the control of expenditures.
(3) To evaluate the present legal control in the light of research findings and such investigations as are available, and the published opinions of recognized authorities in the fields of education, economics, and political science.
(4) To develop and suggest a legal code for the use of those who might seek to enact these findings into law.

CHAPTER VIII

Financial Economies in Business Management of Schools

THE studies summarized in this section are concerned with the elimination of waste and the securing of financial economies in public-school administration. Since another issue of the *Review of Educational Research* is to be devoted to school buildings, studies which suggest economies in the planning, construction, and utilization of school buildings have been omitted.

Administration of School Funds

Linn (**321,** 1930) has pointed out the importance of securing the full rate of interest on school deposits. As a result of his study, Linn recommended that minimum and maximum rates be established by law, for demand and time deposits, and that banks be required to bid for school funds within the legal rate limits.

Ketler (**319,** 1931) analyzed the problems involved in establishing reserve funds for payment of obligations occurring or anticipated in a succeeding fiscal year or years. The study included five types of funds: (a) the interim reserve, (b) the building reserve, (c) the sinking fund reserve, (d) the insurance reserve, and (e) the contingency reserve. The desirability of these funds was evaluated with reference to certain criteria.

Excessive borrowing to meet current obligations is generally condemned as uneconomical. This is particularly true when these obligations are not met promptly and are allowed to accumulate. A careful analysis of periodical cash needs and income furnishes a basis for managing expenditures so as to reduce temporary loans (**244:** 319-27, 1927). Adjusting the period of tax collection to correspond with the periods of the greatest cash demands of the school system will serve to reduce to a minimum the necessity for interim reserves and temporary loans (**256:** 44-81, 1928).

Frequently the cost of temporary loans can be eliminated by transferring money from one fund to another. Such transfers, however, should be carefully guarded to prevent misuse and loss of funds (**335,** 1931).

Prompt payment of all bills on which discounts are allowed will result in substantial savings for many school districts. School officials should so formulate their procedures for approving and accounting for bills as to be able to take advantage of all discounts (**335,** 1931).

Janitorial service—The most comprehensive study of janitorial service was reported by Reeves (**354,** 1925). The study includes:

> A. An intensive study of the work of forty-five janitors in eighteen schools in cities of from 15,000 to 50,000 population, and a quantitative analysis of the provisions concerning the work of janitor service in the rules and regulations of boards of education and administrative officials of ninety similar cities was made for the purpose of discovering the jobs included in janitorial service and the frequency and time of performance of these jobs.
>
> B. Systematic observations of janitors as they regularly performed their various jobs were recorded for the several jobs in the form of quality of results, and the time required for performance studies. . . .
>
> C. Controlled experiments were conducted. . . .

On the basis of these data one hundred principles and standards of performance including all phases of the janitor's work, were stated (**354:** 182-92, 1925). The results of this investigation and of other studies have been incorporated into a comprehensive treatment of the problems of janitorial service by Reeves and Ganders (**252,** 1928).

Womrath (**398,** 1925) gave a thorough treatment of janitorial-engineering service. The importance of training the school janitor is emphasized, and methods of increasing the efficiency of janitorial service by standardizing the work schedules and the tools and materials used are outlined.

Methods of measuring janitorial-engineering service and standards for the various phases of the work have been developed by Engelhardt, Reeves, and Womrath (**287,** 1926). The score card provides for rating janitorial service under sixteen major headings and a number of subheadings.

Studies by Butsch (**275,** 1931), Garber (**295,** 1922), Hill (**308,** 1930), and Mustard (**341**) indicated that the school janitor has been and is untrained, poorly paid, often physically handicapped, and seldom well supervised in his work. Lovejoy (**331,** 1929) outlined methods for selecting the personnel. Robinson (**359,** 1930) indicated the economies secured through standardizing the work and pay of the custodian. Dalthorp (**281,** 1930) suggested the possibilities of improving the service through adoption of an adequate salary schedule. Fowlkes, Anderson, and Jones (**292,** 1929) studied the cost and allotments of various types of janitorial supplies and suggested guiding standards for expenditures for these articles.

Heating and ventilating—Reeves (**354,** 1925) outlined the most efficient methods of firing and cited a number of inefficient methods which result in waste. Demary (**283,** 1929) found that the heating plants of one hundred small school systems were operated at about 20 percent efficiency. In summarizing a number of studies on school ventilation, the New York Commission on Ventilation (**344,** 1931) estimated

that $200,000 is wasted annually in New York state alone through the use of mechanical heating and ventilating systems.

Demary (**284,** 1929) and Lovejoy (**325,** 1929) gave examples of specifications for coal. Feinstein and West (**289,** 1931) developed a method for testing coal which requires only a meter for measuring the condensed steam returning from the radiators. Hixon (**309,** 1930) reported savings of as much as 50 percent in heating costs in New York school systems, where careful attention has been given to the fuel used and the heating plant has been efficiently operated.

Maintenace of school property—Almack (**259,** 1925) estimated that the life of school buildings of varying grades is decreased five to ten years when proper attention is not given to repairs and replacements. Schwartz (**366,** 1926) analyzed the repair service of a large city school system and found that accounting procedures were inadequate, the repair force poorly organized and equipped, and expenditures for repairs inequitably distributed with reference to the needs of the school plant. Pace (**347**) reported that city districts in Utah with a low cost per pupil for repairs and replacement have better building conditions than rural districts with considerably higher costs for these items. The combination of low salaries for janitors and small expenditures for repairs inevitably resulted in poorly kept school buildings. The Utah school districts paying the highest salaries to janitors reported lowest cost per pupil for repairs (**347**).

The various types of repair jobs and the frequency and time of occurrence were listed by Schwartz (**366,** 1926). Riesbeck (**357,** 1926) analyzed the various maintenance jobs connected with the heating and ventilating plant. Ramsey (**350,** 1926) classified maintenance work under (a) carpentry, (b) painting, (c) electrical, (d) plumbing, (e) heating and ventilation, and (f) labor and masonry, and recommended that city systems have a foreman in charge of each. A maintenance assembly chart is recommended as a device for improving the administration of the service. All of the studies listed stressed the importance of the school janitor in maintenance. Small repair jobs can be done by the janitor and in larger systems a regularly employed maintenance force should be kept. Prompt reporting of needed repairs by principals and janitors, adequate accounting control, and budgeting of the larger items of maintenance in advance of need, are suggested methods for securing economy in this field. Schwartz (**366:** 49, 1926) stated that ". . . the path to economy lies in the direction of larger buildings, constructed of high grade material and furnished with service equipment of exceptional operating efficiency."

Insurance of school property—Studies of fire insurance procedure by Brunstetter (**242,** 1931), Melchior (**334,** 1925), Skaaland (**373,** 1927), Smith (**374,** 1930), and Taylor (**382**) showed that local school officials

have not given the problem of property insurance attention commensurate with its importance from the standpoint of safety and financial economy. Failure to eliminate fire hazards, inaccurate appraisal of property, failure to place insurance under the most desirable type of policy, lack of adequate accounting, and poor protection of policies are common defects of insurance management.

The majority of fires in school buildings are preventable. Boards of underwriters classified more than half of the fire losses reported for five years, 1916-20, as strictly preventable and the remainder partly preventable (**334,** 1925). The causes of fires in school buildings in New York, Minnesota, and Mississippi as reported in the studies by Melchior (**334:** 124, 1925) Skaaland (**373,** 1927), and Taylor (**382**) were largely due to defective heating plants and spontaneous combustion. School officials may reduce the hazards due to common causes of fire by taking certain steps (**242:** 47, 1931), (**334:** 49-57, 1925), (377, 1927), (**382:** 190-91).[1]

Appraisal of school property is usually merely an estimate of school officials. Few districts employ appraisal firms, although this method is recommended as the best. The advantages of appraisal by reputable firms is well illustrated by Thomas (**387,** 1930).

The specific form or specific-schedule form of policy is recommended for school property (**394,** 1930), (**374,** 1930), (**382**). Insurance issued for a five year term is the most economical, as the rate is only four times the one year rate. Eighty percent co-insurance is recommended in practically all of the studies cited.

A study of school fire insurance in Pennsylvania showed that school districts of the state received in indemnities only about 44 percent of the amount paid in premiums (**261,** 1925). In New York the ratio was 35.6 percent (**334:** 163, 1925). Because of this wide difference in premiums and indemnities a considerable number of cities and several states have established insurance funds. Smith (**374:** 100, 1930) reported twenty-two cities that carry their own insurance. His investigation showed that in none of these cities has self-insurance proved unsatisfactory. In other reports, substantial savings from self-insurance were cited for Cincinnati and Philadelphia (**261,** 1925). Smith (**374:** 102-106, 1930) investigated the status of the state insurance funds of South Carolina, North Dakota, and Wisconsin and concluded that state insurance would result in considerable saving over commercial rates. Sherard (**371,** 1926) reported that the net annual savings on $30,000,000 of school fire insurance carried in the state insurance fund of South Carolina was $200,000 in 1926. Platts (**349,** 1931) reported that North Dakota saved $339,476.95 in 1925 through state insurance.

[1] The year is omitted for all unpublished or mimeographed materials. The dates of such references are given in the bibliography at the end of the *Review*.

The possibility of effecting substantial savings through efficient management of fire insurance is well illustrated by Smith in his analysis of insurance procedures in eight cities of New Jersey. The possible savings ranged from $93.20 to $2,505.11 for the various cities (**374:** 57, 1930).

Administration of Supplies and Equipment

A recent study reported by Mullan (**339,** 1930) showed that methods of selecting, purchasing, and distributing school supplies have not been standardized and are by no means uniform among the school systems investigated. Anderson and Fowlkes (**262,** 1928) stated that little attention is given to supply management except in large cities, and that few or no standards are maintained.

Taylor's (**384,** 1926) investigation of supply management in sixteen cities is the most comprehensive study in this field. Fourteen criteria for evaluating the various phases of the supply problem were developed, and the procedures employed in the school systems investigated were evaluated in terms of these criteria (**384:** 10-14, 1926). Fifty-one standards and principles for improving the administration of supplies are given (**384:** 87-91, 1926). A number of accounting forms are suggested as aids in carrying out the recommended procedures (**384:** 68-81, 1926). Anderson and Fowlkes (**262,** 1928), Brown (**271,** 1918), Conrad (**278,** 1931), Kelty (**318,** 1930), Lovejoy (**324,** 1929), Mullan (**339,** 1930), and Rich (**356,** 1927) outlined guiding principles of supply management, which have been tested in practice.

Shipley (**372,** 1929) gave a striking illustration of economies which may be secured by centralized buying in small school systems. A comparison of prices paid by individual districts with prices obtained by the county purchasing agent of Fresno County, California, on 376 purchases, showed that the centralized system saved an average of 47 percent of the district prices on similar articles.

Barr (**264,** 1922) suggested some methods for controlling the use of, and accounting for, school textbooks. The National Society for the Study of Education (**343,** 1931) made an exhaustive study of the use of the textbook which pointed out the important factors that should be considered in selecting texts.

The principles for administering supplies apply equally well to instructional equipment. Donnelly (**285,** 1925) found twenty-five different economies effected in the provision of equipment for home economics. Equipment made in the school was the most frequent type of economy reported in this study. Hart and Peterson (**305,** 1927) estimated a possible saving of $50,000 on unused blackboard space in 784 classrooms of California.

Transportation of Pupils

In 1924 Abel (**257**, 1924) reported a study of 260 school consolidations. The cost of transportation per pupil per mile per day ranged from one-half cent to 27 cents, with a median cost of 3.8 cents. Other studies show wide ranges in unit costs for transportation.

All investigators of pupil transportation costs complained of the inaccuracy and inadequacy of the financial records and reports concerning transportation. After studying the transportation problems in Florida, Johns devised a complete accounting system for school transportation which provides the facts necessary to efficient administration (**316**: 104-27, 1928). Davies (**282**) also recommended a set of accounting forms, similar in many respects to those proposed by Johns.

Several studies of transportation costs have been concerned with the desirability of school-owned equipment as compared to contracted service. One of the most comprehensive studies was made by Evans (**288**, 1930) in California. The district-owned facilities were found to be cheaper; contracted service cost 12 percent to 15 percent more according to the size of the bus. Johns (**316**: 80, 1928) found that the costs of contracted and owned facilities were equal in Florida, both costing an average of .94 cents per pupil per mile per day. A study of transportation in Texas showed that the contract systems cost 12 percent per child per month more than district-owned systems and 44 percent more per pupil-mile (**385**, 1926). The district-owned system was also found to be cheaper in Utah (**389**, 1928). Studies by Davies (**282**) in Florida, Greene (**300**, 1926) in Colorado, Hutchison (**314**) in Ohio, Mothersead (**338**) in Oklahoma, and Warren (**393**) in Indiana, showed that it is more economical for the districts to own and operate their transportation equipment. Contrary to these findings, Payne's (**348**) study of transportation in centralized schools of Oklahoma showed that the contract systems cost on the average only 78 percent as much as the district-owned systems and are cheaper regardless of such elements as number of children transported, distance, or length of term. With this exception the studies indicated that it is more economical for the school district to own and operate their transportation equipment.

In many instances excessive transportation costs are due to small units or to short, poorly planned bus routes. On the average, per-pupil unit costs are considerably less when large busses traveling over long routes are used instead of small busses traveling short distances (**282**), (**288**, 1930), (**314**), (**338**), (**348**). Likewise the larger districts providing the greatest amount of transportation have the lowest costs. Obviously, density of population is an important factor in determining the size of the unit of transportation. Longer routes may result in decreased cost per pupil per mile, but the annual cost per pupil may

be increased (**315:** 86, 1926). Poorly planned consolidations have resulted in many uneconomical and inefficient schools with excessive costs for transportation (**379**).

The Administrative Unit and School Finance

A comparison of consolidated and one-teacher schools in Connecticut and Maryland, reported by Cook (**279,** 1925), showed that the graded schools were the more efficient educationally at a lower financial cost. Hadley (**302**) found that the first-class school districts of ten Colorado counties were distinctly superior in pupil achievement to the smaller third class districts.

Small schools are inevitable products of the small administrative unit. Gaumnitz (**296,** 1930) reported that 60.5 percent of all American public high schools have enrolments of one hundred pupils or less. Inferior teachers, excessive teacher loads, low academic standards, narrow curriculums, and unjustifiable subject requirements are characteristics of small high schools, according to Roemer (**361,** 1929). An investigation of costs and offerings of California high schools by Nanninga (**342**) showed that curricular and extra-curricular offerings increase with the size of the school, while per-pupil costs decrease. This study indicated that a high degree of efficiency is reached in schools with five hundred to six hundred pupils enrolled. Studies by Burris (**274**), Ford (**290,** 1928), Hart and Peterson (**306,** 1928), Holy (**310,** 1924), Hood (**311,** 1929), Loomis (**322,** 1922), Reeves (**355,** 1924), Roubal (**363**), and Taylor (**383**) showed that pupil costs in small schools are excessive as compared to the larger units. Pace (**347**) reported that unit costs of maintenance and operation are inversely related to size of school, despite the fact that small schools were not as well kept as the larger units.

The cost of transportation is an important factor in determining the most economical size for the rural consolidated unit. The Rural School Survey Committee of Indiana (**315,** 1926) pointed out that increasing consolidation tends to increase the cost. However, the instructional advantages of the larger schools were not related to costs in this study.

The county has been advocated as the most logical unit of school organization. Nuttal (**345,** 1931) investigated the county unit organization of Maryland and Utah and found that the county unit has been instrumental in equalizing educational opportunities in these two states. The Rural School Survey Committee (**315,** 1926) estimated that a county unit system in Indiana would make possible a direct financial saving of $1,796,000 annually, and would prove to be a much more efficient administrative and supervisory organization than that provided by township organization. McClellan (**332**) estimated that a

county unit organization would secure a reduction of 22.5 percent in the cost of education in one Ohio county.

School Organization

Type of organization—Bell (**267,** 1929), Rossman (**362,** 1924), and Spain (**375,** 1924) presented cost data to show that the platoon or work-study-play organization provides an enriched elementary curriculum at a lower cost per pupil than the traditional elementary school. Ayer (**263,** 1925) had eighty-five educational experts rank the academic, industrial, duplicate, and junior high-school types of school organization on the basis of ten factors of efficiency. The duplicate type of organization was ranked above all other types of elementary school organization.

Reavis (**351,** 1931) summarized the literature on schools organized on a twelve-months basis in a previous issue of the *Review of Educational Research* and concluded that the twelve-months school has not been proved to be more economical than the regular term school. Roe (**360,** 1931) compared the costs of several all-year schools in Newark, New Jersey, with costs of regular term schools. The all-year schools cost $2 to $6 less per pupil per subject than the part-time schools.

The curriculum—Henry (**307:** 54-73, 1924) found that manual arts, home economics, and science were the most expensive subjects and that English and mathematics were the least expensive subjects in the high schools of Illinois. Strayer and Haig (**381:** 62-67, 1923), in analyzing subject costs in the high schools of New York state, found that stenography cost $26 per pupil as compared to English, which cost $11 per pupil. Small classes, necessitated by the laboratory method of teaching, special equipment, and higher salaries for instructors, account for the high costs of vocational subjects and science. Henry (**307:** 54-73, 1924) estimated the reductions in cost in Illinois schools if only English, mathematics, science, and social science comprised the curriculums. In the school studied the estimated reduction varied from .42 percent to 18.8 percent. The average reduction was 8.8 percent.

The narrowness of the curriculum is a serious shortcoming of the small high school. Wetherow (**395,** 1922) outlined a curriculum with a total of twenty-four units, not more than fifteen of which are offered each year. Courses are alternated in order to reduce the number of classes held. Roberts (**358,** 1928) analyzed the administrative effects of curriculum reorganization in the small high schools of West Virginia and found that under the new organization a more desirable distribution of subjects was obtained at a lower cost per pupil for instruction.

Hammack (**304**) pointed out the waste involved in devoting a large part of the high-school budget to subjects from which a large majority of the pupils derive little benefit. He found that in the fourth-class high

schools of Kentucky, language and mathematics required over 50 percent of the total expenditures for these schools. Social science was allotted only 16.48 percent of the expenditures for instruction.

Pupil-teacher ratio—Burris (**274**) and Wheat (**396,** 1918) found that size of class is the most important determining factor in the pupil unit costs of instruction in the high school. Small classes likewise result in higher costs in the elementary schools. The importance of the pupil-teacher ratio is well illustrated by Turnbull (**388**), who estimated that increasing the average size of class by five pupils would reduce the cost of junior high schools in Los Angeles $300,000 annually. Lovejoy (**330,** 1931) reported a saving of over $70,000 annually in the personnel budget of a city school system, secured by readjusting the size of classes. Hudelson's (**312**, 1929) summary of sixteen studies of the effect of class size on teaching efficiency and Stevenson's (**376,** 1925; **377,** 1925; and **378,** 1923) extensive investigation of this problem offer substantial evidence that class size has little effect on pupil progress as measured by standard tests.

CHAPTER IX

State and Federal Aid

THE state's well recognized position of responsibility in education considered by and of itself would justify the complete state support and administration of schools. Many factors in our history, however, have combined to produce a delegation of both support and administration to local units. These two functions have also been kept together closely in a single jurisdiction. At the same time the state which has delegated the support and administration of schools has aided materially, though in varying degrees, in both processes. Particularly, has the state granted financial aid in the support of education.

As in other phases of education, the several states proceeded with years and years of experience in state aid without any serious attempt to devote scientific study to the aiding process. This was as inevitable as it was regrettable. Nevertheless, with the rise of scientific inquiry and its application to education, we came finally to approach the problem of state aid through the avenue of research. The twentieth century, giant-like in so many ways, brought us this present approach. State aid, perhaps more than other processes, has a few more significant landmarks which must be briefly described, in order to adequately sketch a review of the field.

Early Studies of State Aid

The early monumental work is Cubberley's *School Funds and Their Apportionment,* (**406,** 1905). As late as 1924, this was described as "the standard work in this field . . . deducing the principles by which any state apportionment plan should be arranged" (**1:** 20, 1924). To a remarkable extent the germs of later scientific effort are to be found in Cubberley's analysis of the various bases of state aid and the wealth of clues which he gave to the observant student. The dissertation has notably both stimulated and guided subsequent research as well as state aid developments throughout the country.

Swift's exhaustive and scholarly study, *A History of Public Permanent Common School Funds in the United States, 1795-1905* (**439,** 1911), is one to which every research worker in the field of state aid has turned many times. Particularly has this study been of value to state administrative workers as they have struggled with an individual state's problems in the development or revision of a state aid plan. Here, too, was a landmark representative of the highest order of historical research in the field of educational finance.

Both Cubberley and Swift followed their earlier studies with later ones on state aid. Swift has adhered the more closely to finance and state aid, Cubberley to general administration. While several studies of Swift will be referred to later, mention should be made at this time of his four volumes, *Studies in Public School Finance*, beginning 1922 and dealing with groups of selected states in the West (**445,** 1922), the East (**442,** 1923), the Middle West (**443,** 1925), and the South (**444,** 1925). In these studies Swift places much emphasis on tendencies, inequalities, and causes. These studies are exceedingly valuable as analyses of state situations, a type of research still needed as a basis for technical and inventive contributions.

Pioneer Research of the Past Decade

While the past quarter century was the delimiting period in state aid research, the past decade has been the one of greatest contribution. A few landmark studies belong to this decade—studies which, although comparatively recent, are of pioneering character. While individuals will vary in their selections for this group, many will agree upon the inclusion of Updegraff's volume of 1922 on *Financial Support* in the rural school survey of New York state (**447,** 1922), the 1923-24 studies of the Educational Finance Inquiry Commission (**436,** 1923; **419,** 1924; **431,** 1925, and **432,** 1924) and the early works of Mort, particularly *The Measurement of Educational Need* (**421,** 1924) and his studies on state aid in New York found in the 1925 *Report of the Special Joint Committee on Taxation and Retrenchment* (**427,** 1925) and in the 1926 *Report on Financing Education in Cities* (**426,** 1926). In this group should be included the practical pioneer among the decade's state aid plans, that adopted by Maryland, (**417,** 1921), which is of great importance because of its early enactment into law.

The studies included in the group, together with the Maryland law, rank as pioneer because they depart from old forms and practices, blaze new trails, and possess distinctiveness and compelling vitality. Moreover, they have produced significant results.

The Maryland plan lacked the close refinement now possible, yet it possessed the advantage of being simple. Under this plan, "any county which cannot, with a school tax rate of 65 cents, carry the proposed schedule of salaries and allow a reasonable amount for other current expenses shall have an allotment from the equalization fund to enable it to carry the new program with a 65 cent school tax" (**417**: 12, 1921). In comparison to other state plans, the Maryland plan was favored by a well adapted system of administrative units. The Maryland law was a pioneer of the new state aid with emphasis upon equalization.

Updegraff's study (**447,** 1922) was recognized as an important piece of research along new lines. Analyzing the New York system, Upde-

graff summarized his fundamental principles and developed criteria for determining state aid efficiency. He utilized a broad social and economic approach. His plan is an exponent of facilitating the equalization of educational opportunity, of stimulating local effort, of penalizing the lack thereof, and of encouraging by grants the introduction of new features into the schools. His plan was not adopted although it has unquestionably influenced developments in New York.

An extensive and significant series of educational finance studies was undertaken by the Educational Finance Inquiry Commission in the autumn of 1921. While these studies were not to deal primarily with state aid, their analyses of this problem in the light of the general finance situation produced significant contributions, particularly in the volume of Strayer and Haig (**436**, 1923). This study of New York state, published as the first volume of the series, followed soon after Updegraff's study of financial support in New York and profoundly influenced the work of Mort and many later research workers in this field. The chapters dealing with the economic limitations of educational expenditures and school finance in relation to revenue were distinct contributions to the basic economics of state aid; while the "index of economic resources," presented by this report, is suggestive of more valuable lines of work for future researches than have yet been realized. The two most important contributions to the state aid problem, however, are to be found in Strayer and Haig's clarification of the principle of the equalization of educational opportunity and in their analysis of the mutual exclusiveness of "equalization" and "reward for effort" as criteria to be satisfied in a comprehensive state aid plan (**436**: 174-5, 1923).

The Illinois volume of the Educational Finance Inquiry by Henry C. Morrison is of particular interest to research workers in the field of state aid because of its discussions of the idea of terminal cost (**419**: 138-89, 1924). Terminal costs in the sense of ultimate costs ought, of course, to be considered in the development of any program of state aid. The present economic depression indicates also that economic cycles and the ups and downs of public finance ought to be considered in the building of state aid plans. The importance of terminal costs to state aid programs in the sense considered in the Illinois study, however, would seem to be far less in any system of state aid adhering to the theory of equalization than in one where the theory of reward for effort plays a dominant part.

To the stimulus of the Educational Finance Inquiry the response was a heretofore unknown activity in financial research and in no field was the production more marked than in state support. Mort, a graduate student during those days, emerged with a series of inventive, technical, and generative contributions which have not only been continued by

himself to a remarkable degree, but have also had a profound effect upon subsequent research in the field and upon programs of state support or state laws in a majority of the states of the Union. Mort's doctoral dissertation, *The Measurement of Educational Need* (**421,** 1924), in essence rebelled against the lethargy of the earlier studies and their tendencies to accept general and unrefined measures of the educational load of a community. If the "equalization of educational opportunity" were to be appreciably realized, the basic educational need of a community must be subjected to analysis. "The educational need of a community is regarded as the composite of all those elements in the community that would affect the cost of the public educational offering . . ." (**421:** 1, 1924). Mort's dissertation (**421,** 1924), based on New York data, developed this analysis. The relative weighting of his elements was determined, the "minimum program" was expressed by reference to criteria which adhered steadfastly to equalization, and weighted pupil standards for measuring educational need were derived and applied to the determination of the cost of offering a reasonably equivalent educational program in all communities.

Mort's studies did not stop with the measurement of need. In 1924-25 with the cooperation of Strayer, McGaughy, and Haig, Mort (**427,** 1925) proposed a complete plan of state aid for New York as a result of his work with the Joint Committee on Taxation and Retrenchment in that state. This plan, the essentials of which were enacted into law, utilized the measurement of need, proposed a minimum program in the support of which the state would participate, related the local support of the minimum program to the community's ability, provided for the guarantee of old grants in aid without materially jeopardizing equalization, and pointed out the most satisfactory way of including the special "reward-for-effort" feature if the state found such inclusion to be advisable. Since 1925, state aid developments in New York have followed substantially, but with revisions and refinements, the plan proposed in this study and first enacted under what is locally known as the Cole Law. Closely following this study, Mort in 1925-26 worked with the Friedsam Commission on School Finance and Administration appointed by Governor Smith, reporting in the Commission's document on *Financing Education in Cities* (**426,** 1926). Based on the same principles as those previously cited, the chief contribution of this study was in the method of raising the level of the minimum program and in effecting further refinements to the equalization law with a view to the requirements of city school finance.

Following his dissertation and the two New York studies referred to above, as well as other adventures in state aid, Mort (**422,** 1926) published in 1926 *State Support for Public Schools.* This monograph presented an uninvolved summary of the author's research on state

aid up to the time of publication. While no research student of state aid should neglect a detailed study of Mort's earlier works, the essentials of his technic and their application down to 1926 will be found in the study referred to above. Carter Alexander has given us an excellent review of this study in his *Educational Finance Studies* (**400**, 1931). In his evaluation, to which most students of the subject will subscribe, Alexander says that "this book, the dissertation on which it is based, and the researches which the two publications stimulated or initiated, have probably done more to bring the American ideal of equality of educational opportunity down to earth than any other one influence in a generation" (**400:** 70, 1931).

We are now in the infancy of the state support movement. Present economic conditions may tend to retard the actual adoption of improved state aid systems, but they cannot fail to center attention upon and stimulate further research on so vital an economic problem as state support for schools.

It is timely, therefore, that we review the early contributions in the field. Furthermore, no meaningful review can blindly omit consideration of the pioneer researches which have been previously discussed in these pages. In fact, we are in need of thorough studies at once in the history of state support such as *The Development of State Support and Control of Education in Connecticut*, by Walker (**404**, 1926).

Special Phases of State Aid and Outstanding State Studies

Since 1925 several important studies have been published reporting the results of research either upon special phases of the state aid problem such as transportation and capital outlay, or upon the general problem of state aid in specific states. Most of the research in this group was greatly influenced and stimulated by the work of the Educational Finance Inquiry or by Mort, or both. Among the earliest of these studies was that by Morrison on North Carolina (**418**, 1925), and the one by Singleton on Georgia (**433**, 1925), published in 1925. Morrison's study dealt extensively with the historical approach showing the gradual evolution of the equalization of the educational burden and the progress and refinement in the method of distributing state aid from 1901 to the law of 1923. More concerned with the burden of support than with refined measures of the educational task, it is of most value for those working on the problem in Southern states and where the extension of the school year is a phase of the equalization issue. Singleton was the first to follow Mort's pattern, although his measurement of need was less refined. Although working on an individual state, Singleton was handicapped by lack of adequately refined data along five different lines, and his study is an excellent example of an ingenious as well as defensible treatment of the state aid problem

under adverse circumstances. For Alexander's review, see (**400**: 81-84, 1931).

In the same group also is Simpson's Connecticut study (**405**, 1927), published in 1927 by the state as a report prepared by the Division of Research and Surveys of the State Board of Education for and at the request of the Commission on the Revision and Codification of the School Laws. This study was written for popular consumption and avoided as much as possible the presentation of complicated statistical material, although in its prosecution it represented the first detailed and complete application of Mort's technic outside of New York. In addition, the study contains a detailed analysis of the need of an improved basis of distributing state aid and a treatment of the transportation problem. For Alexander's review, see (**400**: 85, 1931).

Two important studies dealing with transportation were made in 1927 and 1928. Both studies are related to the work of Mort and designed to contribute to the handling of the transportation problem in harmony with a state equalization system. Burns (**402**, 1927) in his *Measurement of the Need for Transporting Pupils* employed advanced statistical technics which rendered the study of little use to most workers. Johns (**414**, 1928), however, in his *State and Local Administration of School Transportation* proved the value of such studies as Burns' by utilizing its contributions in the development of a practicable technic for measuring transportation need. Johns' study is valuable in that it gave a method by which the state may apply definite standards to limit the amount and cost of transportation to be included in the state support program based on local ability to support. The findings of the study regarding the local administration of transportation are of great practical value, particularly in the rural field. Transportation is a very difficult problem from every standpoint, including state aid. Where there is justification for the state assumption of the entire cost of transportation, to do this safely requires either an index such as Johns proposes or direct state administration of transportation. Much further study of the problem is needed. It is important that each state apply Johns' technics to itself and evaluate the findings. Out of such work may come confirmations of this technic, modifications of it, or possibly in some state, direct state administration and support of transportation which, after all, is an "external."

Among other studies dealing with special phases of the state aid problem as related to the equalization approach are Harry's (**410**, 1928) work on the *Cost of Living in the State of New York*, and Grossnickle's (**409**, 1931) *Capital Outlay in Relation to a State's Minimum Program*. Harry studied the problem of cost of living subsequent to the general New York studies for the purpose of determining the facts regarding variations and how the minimum program for state support

could be corrected due to these variations in the cost of living of teachers in different communities. The findings gave a technic for making such corrections. Whether or not we desire to use this technic is another question; and, if any state desires to use it, a somewhat technical investigation will be required to determine the correct indexes. These indexes will probably have to be changed from time to time and they should be computed for all districts. This study is an excellent piece of research pertinent to the refinements of earlier technics. It should be followed by further analyses of the factors affecting the cost of equivalent offerings.

Grossnickle (**409,** 1931), studying the capital outlay problem, developed a technic to enable the equalization of this burden expressed through debt service and its relationship to current expense. New Jersey data were employed. Starting with a hypothesis formulated by Mort that there is a constant relationship between current expense and capital outlay, Grossnickle prepared a most interesting and significant study which, although it contains rather complex statistical material, will repay the initiate for reading and will be mistakenly neglected by any student of state aid (**409:** 87, 1931). The author's findings in checking Mort's assumption are summarized as follows:

> By using two regression lines to fit the data, it was shown that a straight line relationship existed between debt service and current expense until the latter reached an amount equal to about $3,000 per teacher. This means that Mort's hypothesis is true until the level of the minimum current program reaches that amount. When the level of the minimum current program exceeds that amount, the amount to be provided for debt service must be determined by a different equation from the one used until that level was reached. (**409:** 63, 1931.)

Aside from the technic devised by Grossnickle, he reached an important conclusion that 14 percent of the cost of the minimum current program should be guaranteed to each district by the state to equalize for a minimum capital outlay program. Like all similar studies this very interesting and enticing one should be checked by frequent duplicate studies within the states and the results analyzed in the light of other theories and social or economic conditions, regarding the aid of capital outlay, especially in rural districts. Not the least valuable of Grossnickle's work is his discussion in the first two chapters of the work previously done on this subject. The reader is referred to these chapters in lieu of the presentation of the material here. It is interesting to note that since this particular work was completed, Missouri has undertaken the aid of capital outlay along novel lines through a type of bonus plan for abandoned schools.

Since Mort's original studies and his New York work, including the period covered by the researches utilizing and extending his technics as just reviewed above, he has undertaken a number of studies in the various states including Pennsylvania, Kansas, Nebraska, Michigan,

Missouri, Colorado, and Oklahoma. The Michigan study was not published, but the plan proposed in *The Report of the State Education Survey Commission* in 1931 was indicated by the Commission to have been based largely upon the studies of Mort and Thrun. Mort's Colorado study was made available in mimeographed form only. The Pennsylvania study (**429,** 1927), published as a Commission Report in 1927, included an analysis by Mort and related and technical studies by other specialists. When considered with the Kansas study, an excellent analysis of the new technics is presented.

In these later studies the analysis of the state aid problem has been extended and in some of them the newer equalization possibilities and refinements have been introduced. For example, the Kansas study (**415,** 1928) considered both the elements of transportation and cost of living. In the proposed bill accompanying this report, 60 percent of the current cost for transporting elementary and high-school pupils was allowed in computing the cost of the minimum program. The amount to be allowed was to be limited by regulations of the State Board of Education which were to take into consideration the effect on cost of sparsity of population and other conditions beyond the district's control. This may be compared with the treatment by Johns (**414,** 1928). In an appendix of this report, the author inclosed a special study by Jaggard (**412,** 1928) of "Cost of Living in Different Kansas Communities," which, although the cost of living indexes were not used in the equalization plan proposed, will be found interesting as a repetition of Harry's method (**410,** 1928) with data collected on the Mort-Harry forms. Several other features of interest are found in the Kansas study including the deduction of special aid for vocational work in elementary and high schools from the equalization aid, barring from inclusion the element of non-resident tuition, and the rejection of kindergartens as an element of the minimum educational program. The study included a brief consideration of the junior college as a phase of the equalization program but did not include it in the minimum program as proposed at the time.

Distribution of State Aid

Prior to the advent of research on state aid, there was relatively little agitation over theories or principles regarding its distribution. At least the discussions on the subject were without clear demarcations. With the development of new elements in the school program, the increased cost of schools, the growth of rural school consciousness, the recognition of the need of equalizing educational opportunity, the closer definition of equalization, the rise of research and the adoption of comprehensive state aid systems, there came to be increasingly apparent two general schools of thought on the fundamental principles for guiding the distribution of state aid.

Cubberley (**406**, 1905) indicated that the state should distribute aid to encourage extra local efforts in order to place a premium thereon. Updegraff in 1922, also before any issue had become noticeable, framed his criteria to make equalization of opportunity more easily secured, to encourage by grants the introduction of new features into the schools, and to bring about an increase in state aid when local tax rates increased, as well as to decrease state aid when local rates decreased (**447**: 118, 1922). Strayer and Haig, as previously quoted, pointed out the inconsistency of the double purpose of equalization and reward-for-effort (**436**: 175, 1923). Mort (**422**, 1926) did not include payment for effort in the plans which he developed, first, because he was concerned with equalizing a permissible minimum program with which effort payments were inconsistent; and second, because he believed there were other means of bringing about progress than through the financial technic (**422**: 39, 40, 97; 1926), (**427**: 222-23, 1925), (**420**: 90, 1926). The writer himself previously discussed the question through his analysis of Connecticut grants (**405**, 1927).

Neulen (**425**, 1928) in an analysis of the issue to be deduced from the above references presented in 1928 the results of his inquiry, *State Aid for Educational Projects in the Public Schools*. He stated the two fundamental purposes at issue in the distribution of state aid to be the equalization of educational opportunity on the one hand, and the stimulation of local educational sentiment on the other. He assembled all possible data bearing on certain projects in the respective states, studied these data to determine what constituted general and special practices in state aid, what the tendency was, and what correlation existed between activity in subsidizing projects and educational rank in states. He also sought to determine how special subsidy has functioned in securing educational progress. His conclusions were not definite, but they were interesting and significant. He found special subsidies in general favor with state legislatures and evidence of an advancing trend for state subventions to directly encourage desirable educational activities. At the same time he found in the field of consolidation, for example, that within the limits of his data special subsidy has had no greater effect in advancing consolidation than other devices have had in advancing the same purpose. Similarly his conclusions indicated that the claim of state aid as a stimulant to the transportation of school children or in the development of high schools did not seem to be valid. In general Neulen's study threw much light on the issue and seemed to indicate no evidence that stimulation grants were more effective in securing educational progress than devices which may have been used by other states in securing advance.

Further studies on this subject are needed, however, and it will be particularly enlightening to study reactions to special subsidies during

the period of depression. Before undertaking such studies the position in favor of subsidization should be more carefully analyzed than heretofore. For example, there is a difference between reward for effort as Updegraff (**447,** 1922) used the idea and encouraging the adoption of new features. There is also a difference between special compensating subsidies for legally required activities and encouragement of new effort. Furthermore, no equalization plan has thus far prevented any school district from voluntarily going beyond the minimum educational program. An evaluation study made in 1931 in New York by Mort, Simpson, Lawler, and Essex, showed, for example, that of the new state aid accruing to some eight hundred school districts in New York since 1926, by and large, about one-half went to educational expansion or increased current expense (**423,** 1932). With an adherence to equalization technics progress may be and is secured but this is not a specialized progress in one element at the expense of others. The real importance of adhering to equalization and taking care of the equalization of a satisfactory minimum program first has been well stated by Mort (**422:** 97, 1926). "The equalization of burden is given first place only because it cannot be exercised without state aid; whereas, presumably, encouraging progress is not solely dependent upon the use of state aid." This study recognized the state's responsibility to remove the inequalities of wealth and to equalize the educational burden. Much consideration was given to methods of raising revenue.

Baldwin (**401,** 1927) in his *Financing Rural Education* presented a critical study of the provisions and practices in the several states related especially to rural education and considered from the standpoint of both general and special aid. This study, designed with no particular situation in mind, is valuable for its analyses of current practices in the several states. The author offered three skeletal plans for application in states according to the stages of development reached with state aid at the time of consideration. His idea was that conditions in some states were unfavorable to a comprehensive equalization program. Baldwin's most advanced skeletal plan would, however, also include stimulation grants.

Among the earlier state plans to be reported, Cavins (**403,** 1926) presented a basis for a definite proposal to equalize educational opportunity in West Virginia. Cavins' work, like Dawson's in Arkansas later, was a combination of research and administrative supervision emanating from the state's educational office, a type of which there should be much more throughout the country.

Adams (**399,** 1928) reported *A Study in the Equalization of Educational Opportunities in Kentucky* in 1928. The author in a comprehensive and nontechnical piece of work included a treatment of holding power, factors bearing on holding power, costs, burden, ability, rank-

ing of counties; and then considered whether it was possible for Kentucky to offer an equal educational opportunity to all children. Essential to a favorable answer to this question, Adams concluded, was an adequate revenue system. The report proposed three plans of equalization together with tables showing the county status thereunder. In comparison with many other plans the minimum program, taken to be the number of teachers employed, was not refined, due chiefly to lack of data.

Reusser (**430,** 1929) in a brief but excellent bulletin on *Equalization of Educational Opportunity and Equalization of School Support in Wyoming* presented a program which seems to have been well adapted to that state. In his measurement of need Reusser applied the Mort technic. He applied the methods of Burns and Johns to transportation but found them inapplicable to Wyoming, due to the sparsity of population. Tests showed that cost of living differences were too slight to be considered. An interesting phase of this study was the treatment accorded in the case of isolated children.

Thrun (**446,** 1931) studied *School Financing in Michigan* and presented an equalization plan in connection with the work of the State Education Survey Commission. The author determined the cost of the minimum $1200 program on the basis of cost of one-room schools, using $900 for the instructional element plus $300 for other purposes. This cost was applied to classroom units developed from normal practice in three different sized districts. No definite recommendation was made as to the amount of local contribution to the minimum program. Influenced by the importance of assuring tax-relief, Thrun considered safeguards against over-expansion to be secured largely through budgetary control.

Job (**413,** 1931) in 1931 summarized a study which he directed on *Financing Education in Ohio.* This work was carried on under the auspices of the Ohio Education Association and through a joint committee of that organization, the State Department, and the Congress of Parents and Teachers. The study represented a comprehensive attack on equalization. The brief report here referred to prompts the need of the more complete publication of the finding. The measurement of the educational task considered weightings for the junior high school as a unit. "Taking both cost and pupil ratios into account warrants us weighting the teacher of the senior and four-year high school 1.25 when expressed in terms of elementary teachers. . . . The difference in elementary and six-year and junior high-school costs per pupil appears to be due to the difference in the pupil-teacher ratios" (**413:31,** 1931).

A most valuable approach to the problem of state aid was recently made by Dawson of the State Department of Education in Arkansas through a combination of research and supervisory service. The report

of Dawson and Little (**408,** 1930) entitled *Financial and Administrative Needs of the Public Schools of Arkansas* will repay careful study by students of state aid and by administrators in state school systems. Dawson proceeded to make a plan for the provision of standard elementary and high schools for every child in Arkansas, to set up a plan of school organization, to locate the most feasible areas for schools, to determine the cost of the program, present revenues available for support and the amount of additional funds required. A significant feature of Dawson's work was his concurrent consideration of the problem of local administrative units, the new school program and state aid. The problem of state aid is closely interwoven with that of administrative units and Dawson's work is a fine illustration of an exceedingly valuable approach embracing both administrative and finance features.

Reference has been made to Swift's (**439,** 1911) early work on school funds and his later studies in finance. In 1928 *State School Taxes and School Funds and Their Apportionment* by Swift and Zimmerman (**441,** 1928) appeared as a federal bulletin. This bulletin shows for each of the forty-eight states, by means of quotations from state laws and statistical data, what taxes are levied for public schools both elementary and secondary, what type of funds and grants each state provides for such schools, and describes the present practice adopted by each state in apportioning such funds to various school administrative units. Quoting from the study: "The primary purpose of the accounts presented in the bulletin is to reveal policies of state origin. For this reason no attempt has been made to include a description of the methods employed in apportioning funds for vocational education derived from Smith-Hughes subventions and moneys provided by the states or their respective constituent political corporations. The policies employed in apportioning such funds, although formulated by the states, must in every case conform to and consequently in the last analysis are determined by Federal policies as embodied in the provisions of the Smith-Hughes Act and the Rules and Regulations of the Federal Board for Vocational Education (**441,** 1928). As a result of intensive study the writers are convinced of the soundness of the following conclusions:

> (a) That educational inequalities, flagrant and ominous for the future of our Nation, exist within the borders of almost every state; (b) that these educational inequalities cannot be remedied until the state assumes the responsibility of equalizing school revenues and school burdens. In nearly every state increasing state school funds must be provided, but the provision of larger funds will by no means solve the problem. Equally important is the abolition of the antiquated, unscientific, and unjust methods of apportioning state aid which are still employed in the majority of our states (**441,** 1928).

As in all of Swift's work this document is reliable and valuable. It will be consulted for reference by all those seeking information as to conditions and practices in the several states.

Swift (**440,** 1930) writing in the *Sierra Educational News* raised the question, "Shall California establish a state public-school equalization fund?" Arguing from the facts in other states, through the wealth of his research and from nationwide progress towards equalization, the author gave a good example of how to put the issue. Staffelbach (**435,** 1930) in the same issue presented a more extended discussion of "California Public-School Finances and The California Property Tax." Waterman (**449,** 1930) writing in this magazine explained a plan for equalization in California. He also wrote a doctor's thesis at the University of California in 1930, entitled, *Equalization of the Burden of Support for Education* (**448**). The Committee on Equalization of the California Public School Superintendents Association (**437,** 1931) reported an *Equalization Plan for California Schools.* The general pattern was similar to that of most plans adhering to the principle of equalization. The minimum program contained some interesting features including the method of dealing with small districts, the way of expressing the minimum program itself, the inclusion of kindergartens and recognition of the junior high school as a unit of school organization. Transportation was allowed at 50 percent of the cost during the preceding year.

The Research Department of the Illinois State Teachers Association (**411**), under the title of *Equalizing to Higher Levels,* discussed the effect of the retrenchment setting in by 1930 on teachers' salaries and the states' responsibility therewith, estimated the cumulative cost in education by successive higher levels of equalization both under the "large" and "small" fund methods.

At the beginning of a new decade in state support, research, and administrative experience, it is significant to find in two of the states attempts to evaluate through research the programs of equalization which have been in operation. The State Department of Education of Maryland (**416,** 1930) published a bulletin on *Equalizing Educational Opportunity* to serve two purposes: first, an evaluation of the effect of the equalization fund; and, second, to completely describe the plan. In 1931, Mort, Simpson, Lawler, and Essex (**423,** 1932) studied the effect of the New York equalization program from the year 1926 for school districts of five or more teachers exclusive of central rural school districts. The work was done for the New York Special Legislative Tax Commission, whose Chief of Staff was Haig of the Educational Finance Inquiry Commission. This study, entitled *State Support for Public Schools in New York State as Related to Tax Relief and Educational Expansion,* presented factual material in the nature of evaluation. It will be found useful as indicative of a method of approach to a rather elusive problem. The chief purposes of this research were to ascertain what disposition was made by school districts of the new aid given in

large amounts since 1926, either in the way of tax relief, educational expansion, capital outlay, and debt service or increased balances. The study also indicated justifiable increases in the minimum program to be made by gradual steps and certain refinements that appear to be needed. The New York State Department is now engaged in further researches and evaluation studies of aid to central rural school districts and other types of local units. Such studies as those referred to above, seem to be most essential in states having any great amount of history behind their state aid programs. They offer excellent avenues of research to students of the problem, opportunities for devising technics or methods of evaluation, and, above all, are essential to the desirable refinement of state support programs.

Federal Aid

While the Federal Government has for years financed certain educational functions and aided the states in the support of their educational activities along special lines, the theory of federal aid for education has been accepted with greater reluctance than in the case of state aid. This hesitance to embark on comprehensive federal aid can be readily understood when it is recalled that "education is not mentioned in the Constitution, and by tradition and by practice, the primary obligation for the organization and conduct of education rests upon the states" (**424:**9, 1931). Nevertheless, as shown by the National Advisory Committee on Education (**424,** 1931) in its recent report on *Federal Relations in Education,* there has been a steady flow of federal aid to education from the time of the early land grants down to and including the present time. The same thing had been previously shown with clarity and force by Cubberley (**407,** 1927) and Swift (**438,** 1931).

During the past decade or two, people throughout the nation seem to have developed an awakened consciousness regarding the federal support of education. The question of the position of the government in education has received much consideration, and while most attention has centered around the issue over a federal department of education, no small amount of public discussion and serious thought has been devoted to determining the true place of the government in helping the states to finance schools. From the research point-of-view, however, the question of federal aid has received an insignificant consideration as compared with the scientific work done on state support. There has been no serious undertaking in the measurement of educational need in connection with federal aid. The philosophy of federal aid has, indeed, received but scant attention. Few, if any, technics for studying the question have been devised. In one phase of the subject, however, we have had a very substantial and discriminating piece of original investigation.

Norton (**423**, 1926) in *The Ability of the States To Support Education* contributed a very illuminating study dealing particularly with economic resources and the relative strength of the states to support schools. His study indicated a wide divergence in the ability of the states to support their educational loads. He found a great difference in the extent of support given by the state, in the degree of efficiency of the educational organization, and in the educational attainments of the people. Little relationship was found between ability and effort schoolwise within the states, and at the same time there seemed to be a tendency towards a degree of permanence in economic status and its effect on education. It may readily be said that Norton's study was pioneer among researches on federal aid.

Another study, less technical than Norton's but more developmental, concerned with trends and philosophical aspects, was that previously referred to as prepared by the National Advisory Committee on Education (**424**, 1931). While only minor portions of this study dealt with federal financial aid, the recommendations are based upon careful observation and investigation. Volume I of this report is the summary volume of findings and recommendations. Volume II sets forth the basic facts. Regarding federal grants the following conclusions of this report are significant: (a) that control of education follows financial aid is a false generalization; (b) "increased federal control and weakened local initiative have been distinct products of attempts to use the Federal Government to spread desirable, special types of education by money controls used to achieve quick, wide, and uniform conduct of the special education stimulated" (**424**: Vol. I. 32, 1931); (c) "such federal favoring of special types of education obstructs the growing American tendency . . . to see and deal with the child's life and with society's needs as a balanced whole" (**424**: Vol. I. 33, 1931); (d) matching federal grants for general educational purposes is less serious than matching special purposes which tends to create favored types of education and take discretion from the state; (e) there is justification for using the federal tax system to give financial aid to education in the states.

Finally, the most promising of all research movements to date in the field of educational finance as approached from a nationwide point-of-view is the current undertaking of the National Survey of School Finance of the United States Office of Education. What may be disclosed by this four-year study which will have a bearing upon federal aid cannot, of course, be foreseen. There is little doubt, however, that any such comprehensive undertaking will throw needed light upon federal participation and open to the students of educational finance many problems of research pertinent both to state and federal aid in education.

BIBLIOGRAPHY ON FINANCE AND BUSINESS MANAGEMENT OF SCHOOLS

General Bibliographies

1. ALEXANDER, CARTER. *Bibliography on Educational Finance.* Publications of the Educational Finance Inquiry, Vol. 4. New York: Macmillan Co., 1924. 257 p.
2. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. *Bibliographies on Eight Problems of School Legislation.* Studies in State Educational Administration No. 5, September, 1930. Washington, D. C.: Research Division, National Education Association. p. 3-11. Also, *1931 Supplement,* p. 3-12.
3. ALEXANDER, CARTER and COVERT, TIMON. *Bibliography on Educational Finance.* To be published by the National Survey of School Finance of the United States Office of Education, probably in the fall of 1932. This will continue the Educational Finance Inquiry's bibliography beyond 1923 with some 5000 references, the most important of which will be annotated.

Chapter I. Public-School Accounting

4. ALLEN, WILLIAM; BRUERE, HENRY; and CLEVELAND, F. A. *Handbook of Municipal Accounting.* Bureau of Municipal Research. New York: D. Appleton & Co., 1913. 318 p.
5. AMERICAN SCHOOL BOARD JOURNAL (School Administration Notes). "Accounting for Internal School Funds in El Paso." *American School Board Journal.* 75: 147; November, 1927.
6. BRITTAIN, H. L. "Financial Relations of Boards of Education to Municipal Governments." *American School Board Journal* 49: 14-16, 58, 60-61; September, 1914.
7. BROWN, V. I. "Handling the Money from Student Activities." *American School Board Journal* 75: 112; December, 1927.
8. CASE, HIRAM C. *Handbook of Instructions for Recording Disbursements for School Purposes.* Albany, N. Y.: C. F. Williams and Son, Inc., 1916. 25 p.
9. CASE, HIRAM C. "Uniform System for Recording Disbursements for School Purposes as Prescribed for New York State." *American School Board Journal* 53: 24-26, 68; October, 1916.
10. CLEVELAND, FREDERICK A. *Chapters on Municipal Administration and Accounting.* New York: Longmans, Green and Co., 1909. Chapters 17 and 18.
11. COLEMAN, RAYMOND W. "An Accounting System for High School Activity Funds." *American School Board Journal* 74: 70; February, 1927.
12. ENGELHARDT, FRED and HUNT, C. *Accounting Handbook.* Harrisburg, Pa.: Department of Public Instruction, 1919.
13. ENGELHARDT, FRED and VON BORGERSRODE, FRED. *Accounting Procedure for School Systems.* New York: Teachers College, Columbia University, 1927. 130 p.
14. ENGELHARDT, NICKOLAUS L., and ENGELHARDT, FRED. *Public School Business Administration.* New York: Teachers College, Columbia University, 1927. Chapters 11, 12, and 13.
15. FOWLKES, JOHN G. *Handbook of Financial Accounting for Schools.* Eau Claire, Wis.: Eau Claire Book and Stationery Co., 1924. 56 p.
16. GRILL, G. W. "Internal School Accounting and Office Organization." *American School Board Journal* 65: 41-43, 133; August, 1922.
17. HUTCHINSON, J. HOWARD. *School Costs and School Accounting.* Contributions to Education, No. 62. New York: Teachers College, Columbia University, 1914. 151 p.
18. JONES, GERTRUDE. "Internal Accounting in High Schools." *American School Board Journal* 66: 68-73; April, 1923.
19. KEOUGH, WILLIAM T., chairman. "Report of the Committee on Standardization of Accounts and Terminology." *Proceedings, 1922.* Trenton, N. J.: National Association of Public School Business Officials (John S. Mount, secretary, State Office Building), 1922. p. 39-52.

20. Michigan State Teachers' Association, Committee on Uniform Child Accounting and Unit Costs (Arthur B. Moehlman, chairman). *A Uniform Financial Procedure for the Public Schools of Michigan.* Bulletin No. 4, Parts I and II. Lansing, Michigan: the Association, October, 1924 and April, 1925.
21. Minnesota State Department of Education. *Uniform Accounting for Minnesota.* Circular Letter No. 2. St. Paul, Minnesota: the Department, 1915.
22. Moehlman, Arthur B. "Internal Accounting for High Schools." *American School Board Journal* 63: 40, 42, 120; September, 1921.
23. Moehlman, Arthur B. *Public School Finance.* Chicago: Rand McNally & Co., 1927. 508 p.
24. Moehlman, Arthur B. "Revision of School Accounting Reports." *American School Board Journal* 64: 42-45, 121-22, 125; May, 1922.
25. Moehlman, Arthur B., and Keyworth, M. R. *Public School Code of the Hamtramck, Michigan, Public Schools.* Research Series No. 2. Hamtramck, Michigan: Board of Education, 1927. 260 p.
26. Moehlman, Arthur B., and Lovejoy, Philip C. *Finance Procedures of the Hamtramck, Michigan, Public Schools.* Research Series No. 3. Hamtramck, Michigan: Board of Education, 1928. 162 p.
27. Moran, W. A. "A High-School-Activities Finance Plan." *American School Board Journal* 80: 66, 132; May, 1930.
28. Morris, Emmet, L. "Iowa's New Uniform School Accounting System." *American School Board Journal* 74: 54-56, 138, 140; February, 1927.
29. Morse, Herbert N., and Mount, J. S. *Direction for Using New Jersey's Public School Financial Accounting System.* Trenton, N. J.: State Board of Education, 1926.
30. Morse, Herbert N. "Simplified Accounting System for Small Districts." *American School Board Journal* 80: 100, 102, 104, 106; February, 1930.
31. Myers, W. H. "The Financial Control of Student Activities." *American School Board Journal* 79: 48, 146; November, 1929.
32. National Association of Public School Business Officials. *Proceedings.* Trenton, N. J.: the Association (John S. Mount, secretary, State Office Building), 1922-1931.
33. National Education Association, Research Division. "School Records and Reports." *Research Bulletin 5*: 226-346; November, 1927. Washington, D. C.: the Association.
34. Orr, Lawrence F. *Uniform Accounting System for School Cities and Towns.* Indianapolis, Indiana: State Board of Accounts, 1926. 41 p.
35. Peel, Arthur J. *Simplified School Accounting.* Milwaukee, Wisconsin: Bruce Publishing Co., 1925. 118 p.
36. Stonecipher, J. E., and others. *Simplified School Accounting System.* Wichita, Kansas: McCormack, Mathers Co., 1924.
37. Theisen, William W. *The City Superintendent and the Board of Education.* Contributions to Education, No. 84. New York: Teachers College, Columbia University, 1917. 137 p.
38. Thomas, R. H. "Classification of School Accounts." *American School Board Journal* 51:18, 57-58, 60; September, 1915.
39. U. S. Department of the Interior, Bureau of Education. *Report of the Committee on Uniform Records and Reports.* Bulletin, 1912, No. 3. Washington, D. C.: Government Printing Office, 1912. p. 13-17, 36-46. (Adopted by the Department of Superintendence of the National Education Association, February 29, 1912.)
40. Wilson, E. A. *Instruction for Uniform Accounting and Reporting for School Districts of the State of Idaho.* Caldwell, Idaho: Caxton Printers, Ltd., 1922.

Chapter II. The Public School Budget

41. American School Board Journal (School Finance and Taxation Notes). "The New Texas School-Budget Law." *American School Board Journal* 83: 80; December, 1931.
42. Ballou, Frank W. "Efficient Finance in a City School System." *American School Board Journal* 56: 21-23; June, 1918.

43. Castle, L. J. "Practical Consolidated School Budgeting." *American School Board Journal* 63: 39-40, December, 1921.
44. Clark, Harold F. "Measuring the Budgetary Procedure of a School System." *American School Board Journal* 68: 37-38, June, 1924.
45. Clark, Harold F. "Suggestions for Scoring School Budgets." *American School Board Journal* 71: 47-48, 133-34; October, 1925.
46. Emerson, Wallace. "School Budgets and Budget Procedure." *American School Board Journal* 70:39-40, May; 55-56, June; 71:51-52, July; 52-53, August, 1925.
47. Engelhardt, N. L. "Superior School Budgets." *School Executives Magazine* 50: 309-10; March, 1931.
48. Fitzpatrick, Edward A. "Budget Procedure in a Large City." *American School Board Journal* 79: 55; August, 1929.
49. Kinkade, Arthur. "Public School Fiscal Records from the Viewpoint of the Auditor." *American School Board Journal* 67: 43-45, 126; August, 1923.
50. Lovejoy, Philip C. "Business of Budget Making in a Functional Organization." *Nation's Schools* 4: 86, 88, 90, 92, 94, 96; December, 1929.
51. Lovejoy, Philip C. "Administering the School Budget Efficiently." *Nation's Schools* 5: 92, 94, 96; January, 1930.
52. Michigan State Teachers' Association, Committee on Child Accounting and Unit Costs (Arthur B. Moehlman, chairman). *A Uniform Financial Procedure for the Public Schools of Michigan.* Bulletin No. 4, Parts I and II, Lansing, Michigan: the Association, October, 1924, and April, 1925.
53. Morris, Emmet L. "Iowa's New Uniform Accounting System." *American School Board Journal* 74: 54-56, 138, 140; February, 1927.
54. Moehlman, Arthur B. *An Analysis of the 1921-1922 Budget Requests of the Board of Education, City of Detroit.* Detroit Educational Bulletin, Research Bulletin, No. 4. Detroit: Board of Education, February, 1921. 35 p.
55. Moehlman, Arthur B. *Public School Finance.* Chicago: Rand McNally & Co., 1927. Chapters 11, 16, 17, 18, 19.
56. Moehlman, Arthur B. "Relation of School Finance to the Budget of Public Expenditures." *Official Report, 1931.* Washington, D. C.: Department of Superintendence, National Education Association, 1931. p. 260-61.
57. Moehlman, Arthur B. "The City School Budget." *Proceedings, 1923.* Vol. 61. Washington, D. C.: National Education Association, 1923. p. 949-55.
58. Moehlman, Arthur B. "The City School Budget." *American School Board Journal* 66:41-43; April, 1923.
59. Moehlman, Arthur B., and Keyworth, M. R. *The Public School Code of the Hamtramck, Michigan Public Schools.* Research Series No. 2. Hamtramck, Michigan: Board of Education, 1927. 260 p.
60. Moehlman, Arthur B., and Lovejoy, Philip C. *The Budget Procedure of the Hamtramck Public Schools.* Research Series No. 4. Hamtramck, Michigan: Board of Education, 1930. 156 p.
61. Peel, Arthur J. "A Simple System of Budget Control." *American School Board Journal* 75: 48, 148, 150; September, 1927.
62. Rainey, Homer P. *Public School Finance.* New York: Century Co., 1929. Chapter 6, "School Budget," p. 159-83.
63. Reeder, Ward G. *The Business Administration of a School System.* Boston: Ginn and Co., 1929. Chapter 4, "Making the School Budget." p. 44-65.
64. Roberts, James A. "Preparation of the School Budget." *American School Board Journal* 82: 76, 78, 81; March, 1931.
65. Ross, Carmon. "Budgeting To Prevent Waste." *Nation's Schools* 6: 39-42; July, 1930.
66. Scholz, Paul H. "The School Budget." *American School Board Journal.* 63: 49-50, 121-22, August; 38-39, September, 1921.
67. Smith, H. P. *Business Administration of Public Schools.* Yonkers-on-Hudson, N. Y.: World Book Company, 1929. Chapter 5, "School Budgetary Procedure," p. 88-130.
68. Soper, Wayne. "Budget Your School System out of the Hole." *American School Board Journal* 80: 47-48; February, 1930.

69. SOPER, WAYNE. "By Their Budgets You May Know Them." *School Executives Magazine* 49: 310-12; March, 1930.
70. TWENTE, JOHN W. *Budgetary Procedure for a Local School System.* Montpelier, Vermont: Capital City Press, 1922. 184 p. (Doctor's thesis, Columbia University).
71. WEBER, OSCAR F. *Problems in Public School Administration.* New York: Century Co., 1930. Chapters 18 and 19.
72. WEHN, WILBERT C. "Keeping School Expenditures within Appropriations." *American School Board Journal* 75: 47; November, 1927.

Chapter III. Revenues and Taxation

73. CARPENTER, W. W. and FLOWERS, EUGENE. "Evaluation of Certain Plans of Financing Education in South Carolina." *Peabody Journal of Education* 7:37-41; July, 1929.
74. CARR, WILLIAM G. "School Finance Legislation in 1929." *Journal of the National Education Association* 19:70; March, 1930.
75. CUBBERLEY, ELLWOOD P. *State School Administration.* Boston: Houghton Mifflin Co., 1927. 773 p.
76. FLOWERS, EUGENE. "Study of the Plans of Financing Public Schools in South Carolina." *South Carolina Education* 11: 24-27; September, 1929.
77. HOLLOWAY, H. V. "School Support, Its Sources and Distribution in the State of Delaware." *Fourteenth Annual Schoolmen's Week Proceedings.* Philadelphia: University of Pennsylvania Press, 1927. p. 324-26.
78. ILLINOIS STATE TEACHERS ASSOCIATION, DEPARTMENT OF RESEARCH AND STATISTICS, "State School Finance: a Challenge." *Illinois Teacher* 19: 160-62, 175; January, 1931.
79. JAGGERS, R. E. "Financing the Rural Schools of Kentucky through Local Community Effort." *Kentucky High School Quarterly* 11: 3-18; October, 1925.
80. LENTZ, ALFRED E. "California Elementary School District Support." *Sierra Educational News* 26: 50-52, 64; November, 1930.
81. LINDSAY, E. E. *Problems in School Administration.* New York: Macmillan Co., 1928. 544 p.
82. LINN, H. H. "What Interest Shall School Deposits Bring?" *American School Board Journal* 80: 51-52; February, 1930.
83. MCCUISTION, FRED. *Financing Schools in the South, 1930.* Nashville, Tenn.: the Author (502 Cotton States Building), 1930. 29 p.
84. MORRISON, HENRY C. *The Financing of Public Schools in the State of Illinois.* Publications of the Educational Finance Inquiry, Vol. 9, New York: Macmillan Co., 1924. 162 p.
85. MORRISON, HENRY C. *School Revenue.* Chicago: University of Chicago Press, 1930. 242 p.
86. NATIONAL ADVISORY COMMITTEE ON EDUCATION. *Federal Relations to Education.* Part I, "Committee Findings and Recommendations," 140 p.; Part II, "Basic Facts," 448 p. Washington, D. C.: the Committee, 1931.
87. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. *Bibliographies on Eight Problems of School Legislation.* Studies in State Educational Administration, No. 5. Washington, D. C.: the Association; September, 1930. p. 3-11. *1931 Supplement,* p. 3-12.
88. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Major Issues in School Finance, Part II." *Research Bulletin* 5: 1-63; January, 1927. Washington, D. C.: the Association.
89. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. *The Personal Income Tax and School Support.* Studies in State Educational Administration, No. 8. Washington, D. C.: the Association, February, 1931. 20 p.
90. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. *School Revenue and New Methods of Taxation.* Studies in State Educational Administration, No. 2. Washington, D. C.: the Association, January, 1930. 10 p.

91. National Industrial Conference Board. *The Fiscal Problem in Illinois.* New York: National Industrial Conference Board, Inc., 1927. 219 p.
92. National Industrial Conference Board. *State and Local Taxation of Business Corporations.* New York: National Industrial Conference Board, Inc., 1931. 177 p.
93. National Industrial Conference Board. *State and Local Taxation of Property.* New York: National Industrial Conference Board, Inc., 1930. 245 p.
94. Newcomer, Mabel. *Financial Statistics of Public Education in the United States, 1910-1920.* Publications of the Educational Finance Inquiry, Vol. 6. New York: Macmillan Co., 1924. 188 p.
95. Norton, John K. *Ability of the States To Support Education.* Washington, D. C.: National Education Association, 1926. 88 p. Also published as *Research Bulletin* 4: 1-88; January and March, 1926. Washington, D. C.: National Education Association.
96. Oliver, Stanley C. *Techniques of Equalizing Assessments.* Doctor's dissertation in progress at Teachers College, Columbia University, 1931.
97. Patterson, Ernest Minor. "Can Pennsylvania Raise More Money for Its Schools?" *Thirteenth Annual Schoolmen's Week Proceedings.* Philadelphia: University of Pennsylvania Press, 1926. p. 22-30.
98. Prescott, Herbert F. "School Forests Have Attractive Possibilities." *University of the State of New York Bulletin to the Schools* 16: 204-07; April 15, 1930.
99. Russell, William F., Holy, Thomas C. and others. *The Financing of Education in Iowa.* Publications of the Educational Finance Inquiry, Vol. 8. New York: Macmillan Co., 1925. 279 p.
100. School and Society (Educational Events). "Cost of School Tax Collection in Pennsylvania." *School and Society* 23: 775; June 19, 1926.
101. Sears, Jesse B. and Cubberley, Ellwood P. *The Cost of Education in California.* Publications of the Educational Finance Inquiry, Vol. 7. New York: Macmillan Co., 1924. 353 p.
102. Soper, Wayne. "Sources of Productive School Revenues." *School Executives Magazine* 50: 331-33; March, 1931.
103. Sowers, Don C. *Financing of Public School Education in Colorado.* University of Colorado Studies, Vol. 14, No. 1. Boulder, Colorado: the University, 1924. 93 p.
104. Sowers, Don C. "Public School Finance." *Colorado School Journal* 43: 5-11; December, 1927.
105. Strayer, George D., and Haig, Robert Murray. *The Financing of Education in the State of New York.* Publications of the Educational Finance Inquiry, Vol. 1, New York: Macmillan Co., 1923. 205 p.
106. Swift, Fletcher Harper. *Federal and State Policies in Public School Finance in the United States.* Boston: Ginn and Co., 1931. 472 p.
107. Swift, Fletcher Harper. "Forty Years of Progress in State Policies of Financing Public Schools." *American School Board Journal* 82: 37-9, 118; March, 1931.
108. Swift, Fletcher Harper. *History of Public Permanent Common School Funds in the United States, 1795-1905.* New York: Henry Holt and Co., 1911. 493 p.
109. Swift, Fletcher Harper. "Lessons from Massachusetts School Finance: Part I, State Policies; Part II, Local Policies." *American School Board Journal* 68: 49-51, May; 40-41, 104, 107, June, 1924.
110. Swift, Fletcher Harper. "New Sources of School Revenue Needed." *Sierra Educational News* 26: 22-6; November, 1930.
111. Swift, Fletcher Harper. "The Personal Income Tax and Our Public Schools." *School and Society* 32: 402-05; September 20, 1930.
112. Swift, Fletcher Harper. "The Problem of State Sources of School Revenue: I, Traditional State Sources." *American School Board Journal* 74: 41-3, 144, 146, 148; February, 1927.
113. Swift, Fletcher Harper. "Progressive Tendencies with Respect to Sources of School Revenues." *Proceedings, 1928,* Vol. 66. Washington, D. C.: National Education Association, 1928. p. 699-705.
114. Swift, Fletcher Harper. "State School Funds and Their Apportionment: I, Maryland Plan; II, Ohio Plan; III Oklahoma Plan; IV, Delaware Plan." *American School Board Journal* 76: 39-41, 145, February; 39-41, 140, April; 41-3, 138, June; 77: 37-9, September, 1928.

115. SWIFT, FLETCHER HARPER, and ZIMMERMAN, BRUCE LEWIS. *State School Taxes and School Funds and Their Apportionment.* U. S. Department of the Interior, Bureau of Education, Bulletin, 1928, No. 29. Washington, D. C.: Government Printing Office, 1929. 431 p.

116. SWIFT, FLETCHER HARPER. "State Systems of Taxation for Public Schools: I, Wisconsin Plan; II, North Carolina Plan; III, Connecticut Plan; IV, Montana Plan; V, Massachusetts Plan." *American School Board Journal* 78: 61-2, 142, March; 45-6, April; 65-6, 150-52, May; 55-6, 141, June; 79: 49-50, July, 1929.

117. SWIFT, FLETCHER HARPER. "State Taxes for Public Schools in Michigan." *Journal of Educational Research* 18: 381-86; December, 1928.

118. SWIFT, FLETCHER HARPER. "Status of the Income Tax as a Source of State School Revenue." *American School Board Journal* 81: 60-1, 125; October, 1930.

119. SWIFT, FLETCHER HARPER, GRAVES, RICHARD A., and TIEGS, ERNEST WALTER. *Studies in Public School Finance: The East—Massachusetts, New York, New Jersey.* Research Publications of the University of Minnesota, Education Series No. 2. Minneapolis: University of Minnesota, 1923. 240 p.

120. SWIFT, FLETCHER HARPER, DEL PLAINE, FRANCES KELLEY, and TROXEL, OLIVER LEONARD. *Studies in Public School Finance: The Middle West—Illinois, Minnesota, South Dakota, with a supplement on Alaska.* Research Publications of the University of Minnesota, Education Series No. 3. Minneapolis: University of Minnesota, 1925. 329 p.

121. SWIFT, FLETCHER HARPER, and GOLDTHORPE, JOHN HAROLD. *Studies in Public School Finance: The South—Arkansas, Oklahoma, Alabama, Tennessee.* Research Publications of the University of Minnesota, Education Series No.4. Minneapolis: University of Minnesota, 1925. 224 p.

122. SWIFT, FLETCHER HARPER. *Studies in Public School Finance: The West—California and Colorado.* Research Publications of the University of Minnesota, Education Series No. 1. Minneapolis: University of Minnesota, 1922. 221 p.

123. SWIFT, FLETCHER HARPER. "Summary of Status of Newer Types of State School Taxes." *Official Report, 1927.* Washington, D. C.: Department of Superintendence, National Education Association, 1927. p. 263-68.

124. TAX RESEARCH FOUNDATION. (Prepared under the direction of the New York State Tax Commission.) *Federal and State Tax Systems; 2d edition.* New York: Commerce Clearing House of the Corporation Trust Co., 1931. 91 p.

125. U. S. DEPARTMENT OF THE INTERIOR, OFFICE OF EDUCATION. *Biennial Survey of Education in the United States, 1928-1930.* Bulletin, 1931, No. 20. Washington, D. C.: Government Printing Office, 1931. Vol. I, Chapter 23, "Review of Educational Legislation, 1929-1930." 30 p.

126. U. S. DEPARTMENT OF THE INTERIOR, OFFICE OF EDUCATION. *Statistics of State School Systems, 1927-1928.* Bulletin, 1930, No. 5. Washington, D. C.: Government Printing Office, 1930. 58 p.

127. U. S. DEPARTMENT OF THE INTERIOR, BUREAU OF EDUCATION. *Survey of Education in Utah.* Bulletin, 1926, No. 18. Washington, D. C.: Government Printing Office, 1926. 510 p.

128. WITTE, E. E. "Summary of Some Features of the Federal and State Income Tax Laws and of the Model Personal Income Tax Law Promulgated by the National Tax Association." *Bulletin of the National Tax Association* 9:43-6; November, 1923.

129. YOUNG, DALE S. *Control of Available Public School Income.* Contributions to Education, No. 305. New York: Teachers College, Columbia University, 1928. 110 p.

Chapter IV. Public Relations

130. ALEXANDER, CARTER. "Continuous School Publicity Program." *School and Society* 21: 1-9; January 3, 1925.

131. ALEXANDER, CARTER. "Publicity Work for Better Support of Rural Schools." *Journal of Educational Research* 7:1-13; January, 1923.

132. ALEXANDER, CARTER, editor. *Relative Importance of Current Objections to Secondary Education Made by the Public.* New York: the Author. (Teachers College, Columbia University), 1926. Mimeographed.

133. ALEXANDER, CARTER. "Research in Educational Publicity." *Teachers College Record* 29: 479-87; March, 1928.
134. ALEXANDER, CARTER and THEISEN, WILLIAM W. *Publicity Campaigns for Better School Support.* Yonkers-on-Hudson: World Book Co., 1921. 164 p.
135. BETTER SCHOOLS LEAGUE, INC. *Publicity Material for School Bond Campaigns.* Chicago: Better Schools League, Inc., 1928. 36 p.
136. CLARK, ZENAS READ. *The Recognition of Merit in Superintendents' Reports to the Public.* Contributions to Education, No. 471. New York: Teachers College, Columbia University, 1931. 123 p.
137. FARLEY, BELMONT M. *What To Tell the People about the Public Schools.* Contributions to Education, No. 355. New York: Teachers College, Columbia University, 1929. 136 p.
138. FRISWOLD, I. O. "A Selected and Annotated Bibliography on Public School Publicity." *League Scrip* 11: 13-16, 36-38; December 1930. Minneapolis Teachers' League.
139. GARLIN, RAYMOND E. "Giving Publicity to City School Surveys." *School and Society* 26: 277-80; August 27, 1927.
140. GARLIN, RAYMOND E., and PITTENGER, B. F. "Educational Publicity in Daily Newspaper." *American School Board Journal* 63: 41-42; December, 1921.
141. GRINNELL, JOHN E. *Newspaper Publicity for the Public Schools of Minnesota.* Unpublished master's thesis. University of Minnesota, 1925.
142. MOEHLMAN, ARTHUR B. *Public School Relations.* Chicago: Rand McNally and Co., 1927. 262 p.
143. MORRIS, LYLE, SACKETT, EVERETT B., and BROGAN, WHIT. "Annotated Bibliography of Researches in Educational Publicity to June, 1927." *Teachers College Record* 30: 40-45; October, 1928.
144. NEALE, MERVIN G. *School Reports as a Means of Securing Additional Support for Education in American Cities.* Columbia, Mo.: Lucas Brothers, Publishers (formerly Missouri Book Co.) 1921. 137 p.
145. REYNOLDS, ROLLO G. *Newspaper Publicity for the Public Schools.* New York: the Author (Columbia University), 1922. 125 p.
146. STEVENSON, P. R. *Campaign Publicity for Schools.* Ohio State University Studies, Bureau of Educational Research Monographs, No. 5. Columbus, Ohio: Ohio State University Press, 1926. 59 p.
147. STEVENSON, P. R. "A Cooperative Study of School Publicity." *Educational Research Bulletin* 3: 167-78; April 16, 1924. Ohio State University.
148. TODD, WILLIAM H. *What Citizens Know about Their Schools.* Contributions to Education, No. 279. New York: Teachers College, Columbia University, 1927. 86 p.

Chapter V. Research and Survey Technics

149. ALEXANDER, CARTER. *Educational Finance Studies.* New York: Teachers College, Columbia University, 1931. 92 p.
150. ALEXANDER, CARTER. *School Statistics and Publicity.* New York: Silver, Burdett and Co., 1919. 332 p.
151. ALEXANDER, CARTER and THEISEN, WILLIAM W. *Publicity Campaigns for Better School Support.* Yonkers-on-Hudson, N. Y.: World Book Co., 1921. 164 p.
152. ALMACK, JOHN C., and CARR, WILLIAM G. " The Principle of the Nomograph in Education." *Journal of Educational Research* 14: 340-55; December, 1926.
153. AYRES, LEONARD P. *An Index Number for State School Systems.* New York: Russell Sage Foundation, 1920. 70 p.
154. BURGESS, W. RANDOLPH. *Trends of School Costs.* New York: Russell Sage Foundation, 1920. 142 p.
155. CASWELL, HOLLIS L. *City School Surveys.* Contributions to Education, No. 358. New York: Teachers College, Columbia University, 1929. 130 p.
156. CLARK, HAROLD F. "Index Numbers in Educational Work." *Teachers College Record* 30: 453-60; February, 1929.
157. CLARK, HAROLD F. "Index of School-Bond Prices." *American School Board Journal* 76: 185-86; January, 1928 (and monthly following).

158. Clark, Harold F. *The Effect of Population upon the Ability To Support Education.* Indiana University, Bulletin of the School of Education, Vol. 2, No. 1. Bloomington, Ind.: the University, 1925. 29 p.
159. Dunlap, J. W., and Kurtz, A. K. *Handbook of Statistical Nomographs; Tables and Formulas.* Yonkers-on-Hudson, N. Y.: World Book Co., 1932. 158 p.
160. Edwards, I. N. "Recent Judicial Decisions Relating to Education." *Elementary School Journal* 23: 43-55; September, 1922. Also various articles on legal aspects of school administration, including finance, in *Elementary School Journal* and *School Review*, 1923-1930.
161. Frasier, George W. *The Control of City School Finances.* Milwaukee, Wis.: Bruce Publishing Co., 1922. 132 p.
162. Frostic, Fred W. and others. *Some Variables in Comparative Public School Cost Accounting.* Michigan Education Association, Bulletin No. 12. Lansing, Mich.: the Association, 1930. 25 p.
163. Henzlik, Frank E. *Rights and Liabilities of Public School Boards Under Capital Outlay Contracts.* Contributions to Education, No. 153. New York: Teachers College, Columbia University, 1924. 118 p.
164. Johns, R. L., and Holmstedt, R. W. "Equalization of Serial Bond Payments." *Journal of Educational Research* 17: 20-29; January, 1928.
165. Lambert, A. C. "Useful Units for Making Analysis of School Costs." *American School Board Journal* 80: 65, 134; May, 1930.
166. Lovejoy, Philip. "Some Financial Fallacies." *American School Board Journal* 79:51-52; September, 1929.
167. McGaughy, J. R. *The Fiscal Administration of City School Systems.* Publications of the Educational Finance Inquiry, Vol. 5. New York: Macmillan Co., 1924. 95 p.
168. Moehlman, Arthur B. *Public School Finance.* Chicago: Rand McNally and Co., 1927. 508 p.
169. Monroe, Walter S., and Engelhart, Max D. *The Techniques of Educational Research.* University of Illinois Bulletin, Vol. 25, No. 19; Bureau of Educational Research Bulletin, No. 38. Urbana, Illinois: the University, 1928. 84 p.
170. Mort, Paul R. *The Measurement of Educational Need.* Contributions to Education, No. 150. New York: Teachers College, Columbia University, 1924. 84 p.
171. Norton, John K. *Ability of the States To Support Education.* Washington, D. C.: National Education Association, 1926. 88 p. Also published as *Research Bulletin* 4: 1-88; January and March, 1926. Washington, D. C.: National Education Association.
172. Phillips, Frank M. "Educational Ranking of States by Two Methods." *American School Board Journal* 69:47-49; December, 1924.
173. Reeder, Ward G. *The Business Administration of a School System.* Boston: Ginn and Co., 1929. 454 p.
174. Shelby, Thomas H., and others. *Preliminary Survey of the Laredo Public Schools.* University of Texas, Bulletin No. 2912. Austin, Texas: the University, 1929. 84 p.
175. Soper, Wayne W. *Legal Limitations on the Rights and Powers of School Boards with Respect to Taxation.* Contributions to Education, No. 349. New York: Teachers College, Columbia University, 1929. 124 p.
176. Strayer, George D., director. *Report of the Survey of the Schools of Fort Worth, Texas.* New York: Teachers College, Columbia University, 1931. 438 p.
177. Strayer, George D., and Haig, Robert Murray. *The Financing of Education in the State of New York.* Publications of the Educational Finance Inquiry, Vol. 1. New York: Macmillan Co., 1923. 205 p.
178. Updegraff, Harlan. *Financial Support.* Rural School Survey of New York State, Vol. 3. Ithaca, N. Y.: Joint Committee on Rural Schools, 1922. 233 p.
179. Williams, J. Harold. *Graphic Methods in Education.* Boston: Houghton Mifflin Co., 1924. 319 p.
180. Yakel, Ralph. *The Legal Control of the Administration of Public School Expenditures.* Contributions to Education, No. 388. New York: Teachers College, Columbia University, 1929. 167 p.

Chapter VI. Finance and Business Management in Institutions of Higher Education

181. Agnew, Walter D. *The Administration of Professional Schools for Teachers.* Baltimore: Warwick and York, Inc., 1924. 262 p.

182. Alexander, Carter. *Bibliography of Educational Finance.* Publications of the Educational Finance Inquiry, Vol. 4. New York: Macmillan Co., 1924. p. 79-95.

183. Anderson, Ruth E. "A Study of Tuition Fees in 271 Endowed Colleges and Universities." *Association of American Colleges Bulletin* 15: 285-332; May, 1929.

184. Anthony, Alfred Williams. "Annuity Agreements among Colleges." *Association of American Colleges Bulletin* 16: 473-76; December, 1930.

185. Arnett, Trevor. "How the Financial Needs of an Effective College of One Thousand Students Are To Be Met." *Association of American Colleges Bulletin* 13: 64-73; February, 1927.

186. Bennett, Henry G., and others. *Oklahoma Agricultural and Mechanical College and Its Services.* Oklahoma Agricultural and Mechanical College Bulletin, Vol. 26, No. 1. Stillwater, Oklahoma: the College, 1929. p. 114-66.

187. Black, R. M. "Twenty Years of Progress in the Financial Support of Normal Schools and Teachers Colleges." *Proceedings, 1928.* Vol. 66. Washington, D. C.: National Education Association, 1928. p. 932-34.

188. California Taxpayers' Association. *Report on University of California.* Association Report, No. 38, Part 2. Los Angeles, California: the Association, 1931. 54 p.

189. Carruthers, E. I., chairman. "Report of the Committee on Insurance." *Proceedings, 1926.* Vol. 7, Sec. F. Cambridge, Massachusetts: Association of University and College Business Officers of the Eastern States (M. I. T. Mimeograph Service), 1926. 16 p.

190. Cassatt, Paul C. "Annuities for Colleges." *Proceedings, 1928.* Vol. 9. Cambridge, Massachusetts: Association of University and College Business Officers of the Eastern States (H. S. Ford, secretary, Massachusetts Institute of Technology), 1928. p. 48-59.

191. Chassee, Leo J. *A Study of Student Loans and Their Relation to Higher Educational Finance.* Monographs, No. 1. New York: Harmon Foundation, Inc., 1926. 170 p.

192. Cowen, Philip A. *College Tuition Fees.* University of the State of New York Bulletin, No. 491. Albany, N. Y.: State Education Department, 1930. 25 p.

193. Franke, William B. "Lack of Uniformity in College and University Accounting." *Journal of Accountancy* 41: 22-32; January, 1926.

194. Franke, William B. "Why Standardized Accounting?" *Proceedings, 1929.* Vol. 10. Cambridge, Massachusetts: Association of University and College Business Officers of the Eastern States (H. S. Ford, secretary, Massachusetts Institute of Technology), 1929. p. 66-76.

195. Frasier, George Willard, and Whitney, Frederick Lamson. *Teachers College Finance.* Greeley, Colorado: Colorado State Teachers College, 1930. 419 p.

196. Greenleaf, Walter J. *Expenditures of State Universities and State Colleges, 1924-25.* U. S. Department of the Interior, Bureau of Education, Higher Education Circular, No. 32. Washington, D. C.: Government Printing Office, 1926. 7 p.

197. Greenleaf, Walter J. "Financial Support of Colleges." *Journal of Higher Education* 1: 254-60; May, 1930.

198. Greenleaf, Walter J. *Self-Help for College Students.* U. S. Department of the Interior, Bureau of Education, Bulletin, 1929, No. 2. Washington, D. C.: Government Printing Office, 1929. 136 p.

199. Hamilton, Frederic R. *Fiscal Support of State Teachers Colleges.* Contributions to Education, No. 165. New York: Teachers College, Columbia University, 1924. 51 p.

200. Hand, Elinor. "A Cost Survey in a University Library." *Library Journal* 55: 763-66; October 1, 1930.

201. HARMON, DARALL BOYD. "Some Trends in Financing Higher Education." *Social Science* 6: 97-109; April, 1931.
202. HUMKE, HOMER L. "Equality of Opportunity in Colleges as Determined by Per Capita Costs." *School and Society* 34: 743-44; November 28, 1931.
203. IRVIN, OSCAR W. *State Budget Control of State Institutions of Higher Education.* Contributions to Education, No. 271. New York: Teachers College, Columbia University, 1928. 122 p.
204. KLEIN, ARTHUR J., director. *Survey of Land-Grant Colleges and Universities, Vol. I-2.* U. S. Department of the Interior, Office of Education, Bulletin No. 9, 1930. Washington, D. C.: Government Printing Office, 1930. Vol. 1, p. 76-263; Vol. 2, p. 847-72.
205. LA POE, JAMES L. "Pennsylvania's Support of Higher Education." *Educational Research Bulletin* 8: 23-31, 42-44; January 23, 1929. Ohio State University.
206. LEONARD, R. J., EVENDEN, E. S., and O'REAR, F. B. *Survey of Higher Education for the United Lutheran Church in America, Vol. 2.* New York: Teachers College, Columbia University, 1929. 612 p.
207. LINDSAY, E. E. "Laboratory Costs in State Institutions of Higher Learning." *School and Society* 20: 537-42; October 25, 1924.
208. MAGEE, HERMAN J. *Unit Costs of Salaries in Teachers Colleges and Normal Schools.* Contributions to Education, No. 498. New York: Teachers College, Columbia University, 1931. 76 p.
209. MISSOURI STATE SURVEY COMMISSION. *Preliminary Report on Publicly Supported Higher Education in the State of Missouri, 1929.* Jefferson City, Missouri: State Survey Commission, 1930. 575 p. Directed by Teachers College, Columbia University.
210. MOREY, LLOYD. "Business and Finance in Some European Universities." *Minutes of the Twentieth Annual Meeting, 1930.* Columbus, Ohio: Association of University and College Business Officers (C. A. Kuntz, secretary, Ohio State University), 1930. p. 15-21.
211. MURPHREE, A. A. "The Relations of the University to the State Budget Commission." *Transactions and Proceedings, 1927.* Vol. 25. Oxford, Ohio: National Association of State Universities (A. H. Upham, secretary, Miami University) 1927. p. 65-68.
212. NATIONAL COMMITTEE ON STANDARD REPORTS FOR INSTITUTIONS OF HIGHER EDUCATION. *Suggested Forms for Financial Reports of Colleges and Universities.* Lloyd Morey, chairman, Champaign, Illinois: the Committee, 1931. 88 p.
213. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Major Issues in School Finance, Part II." *Research Bulletin* 5: 1-63; January, 1927. Washington, D. C.: the Association.
214. NEW YORK STATE EDUCATION DEPARTMENT. *Report on Higher Education in the State of New York for the School Year Ending July 31, 1929.* University of the State of New York Bulletin, No. 966. Albany, N. Y.: State Education Department, 1931. p. 71-117, 305-79.
215. O'SHEA, M. V., director. *Public Education in Virginia.* Richmond, Virginia: Educational Commission of Virginia, 1928. Chapter 31, "Financial Support of Higher Education," p. 210-13.
216. PENNSYLVANIA DEPARTMENT OF PUBLIC INSTRUCTION. *Educational Surveys.* Reports of committees appointed by Gifford Pinchot, governor. Harrisburg: Department of Public Instruction, 1925. 398 p.
217. PHILLIPS, FRANK M. *Statistics of Universities, Colleges and Professional Schools, 1925-26.* U. S. Department of the Interior, Bureau of Education, Bulletin, 1927, No. 40. Washington, D. C.: Government Printing Office, 1927. 167 p.
218. PHILLIPS, FRANK M. *Per Capita Costs in Teachers' Colleges and State Normal Schools, 1925-26.* U. S. Department of the Interior, Bureau of Education, Statistical Circular, No. 9. Washington, D. C.: Government Printing Office, 1927. 6 p.
219. PHILLIPS, FRANK M. *Per Capita Costs in Teacher-Training Institutions, 1927-1928.* U. S. Department of the Interior, Bureau of Education, Statistical Circular, No. 11. Washington, D. C.: Government Printing Office, 1929. 6 p.
220. REEVES, FLOYD W., and RUSSELL, JOHN D. *College Organization and Administration.* Indianapolis: Board of Education of Disciples of Christ, 1929. 324 p.

221. REEVES, FLOYD W., and RUSSELL, JOHN D. "The Computation of Unit Costs in Schools of Higher Education." *Nation's Schools* 4: 29-36; October, 1929.
222. REEVES, FLOYD W. "The Cost of Education in an Effective College." *The Effective College.* (Robert Lincoln Kelly, editor). New York: Association of American Colleges, 1928. p. 264-75.
223. REEVES, FLOYD W. "Cost of Education in Liberal Arts Colleges. (Committee Report.)" *North Central Association Quarterly* 2:248-61; December, 1927.
224. REEVES, FLOYD W. "Financial Standards for Accrediting Colleges." *Proceedings, 1927.* Birmingham, Alabama: Association of Colleges and Secondary Schools of the Southern States (Guy E. Snavely, secretary, Birmingham-Southern College), p. 284-300.
225. REEVES, FLOYD W., "Financial Standards for Accrediting Colleges. (A Committee Report.)" *North Central Association Quarterly* 2:372-88; March, 1928.
226. REEVES, FLOYD W., and others. *The Liberal Arts College.* A Survey of Thirty-five Colleges Related to the Methodist Episcopal Church. Chicago: University of Chicago Press, 1932. (Estimated 800 p.)
227. REEVES, FLOYD W., and others. *Report of a Survey of Nine Baptist Educational Institutions of Kentucky.* Louisville, Kentucky: Western Recorder, 1929. 132 p.
228. REEVES, FLOYD W., director, and others. *Report of a Survey of the State Institutions of Higher Learning in Indiana.* Indianapolis: Board of Public Printing, 1926. 206 p.
229. REEVES, FLOYD W., chairman. "Report of the Commisison on the Cost of College Education." *Association of American Colleges Bulletin* 14: 83-91; March, 1928.
230. REEVES, FLOYD W. "Standards for Accrediting Colleges." *Bulletin of the American Association of Collegiate Registrars. (Proceedings, 1927)* 3: 94-117; July, 1927. Baltimore, Maryland: Johns Hopkins Press.
231. REEVES, FLOYD W., and RUSSELL, JOHN D. "Standards for Accrediting Colleges." *North Central Association Quarterly* 3: 214-29; September, 1928.
232. RUSSELL, JOHN DALE. *Efficiency in College Management.* Unpublished doctor's thesis, Indiana University, 1931.
233. STEVENS, EDWIN B., and ELLIOT, EDWARD C. *Unit Costs of Higher Education.* Publications of the Educational Finance Inquiry, Vol. 13. New York: Macmillan Co., 1925. 212 p.
234. STRICKLAND, V. L. "Millage Tax for State Educational Institutions." *School and Society* 24: 302-4; September 4, 1926.
235. THURBER, CLARENCE H. *Fiscal Support of State Universities and State Colleges.* U. S. Department of the Interior, Bureau of Education, Bulletin, 1924, No. 28. Washington, D. C.: Government Printing Office, 1925. 164 p.
236. U. S. DEPARTMENT OF THE INTERIOR, OFFICE OF EDUCATION. *Survey of State-Supported Institutions of Higher Learning in Arkansas.* Bulletin, 1931, No. 6. Washington, D. C.: Government Printing Office, 1931. 139 p.
237. U. S. DEPARTMENT OF THE INTERIOR, OFFICE OF EDUCATION. *Survey of Public Higher Education in Oregon.* Bulletin, 1931, No. 8. Washington, D. C.: Government Printing Office, 1931. 298 p.
238. U. S. DEPARTMENT OF THE INTERIOR, BUREAU OF EDUCATION. *Statistics of Teachers Colleges and Normal Schools, 1927-1928.* Bulletin, 1929, No. 14. Washington, D. C.: Government Printing Office, 1929. 71 p.
239. U. S. DEPARTMENT OF THE INTERIOR, BUREAU OF EDUCATION. *Survey of Education in Utah.* Bulletin, 1926, No. 18. Washington, D. C.: Government Printing Office, 1926. p. 243-47. 510 p.
240. WHITNEY, FREDERICK L., and CONDIT, PHILIP M. *Sources of Income for State Teachers Colleges and State Normal Schools.* Research Bulletin, No. 14. Greeley, Colorado: Colorado State Teachers College, 1929. 68 p.
241. WORKS, GEORGE A., and others. *Texas Educational Survey Report, Vol. VI: Higher Education.* Austin, Texas: Texas Educational Survey Commission, 1925. 389 p.

Chapter VII. Fiscal Control and Textbooks in Business Management of Schools

242. Brunstetter, Max R. *Business Management in School Systems of Different Sizes.* Contributions to Education, No. 455. New York: Teachers College, Columbia University, 1931. 135 p.

243. Engelhardt, N. L., and Alexander, Carter. *School Finance and Business Management Problems.* New York: Teachers College, Columbia University, 1928. 526 p.

244. Engelhardt, N. L., and Engelhardt, Fred. *Public School Business Administration.* New York: Teachers College, Columbia University, 1927. 1068 p.

245. Engelhardt, N. L., and Engelhardt, Fred. *Planning School Building Programs.* New York: Teachers College, Columbia University, 1930. 574 p.

246. Frasier, George W. *The Control of City School Finances.* Milwaukee, Wisconsin: Bruce Publishing Co., 1922. 132 p.

247. Heer, Amos Leonard. *The Present Status of Business Executives in the Public Schools of the United States in Cities of 25,000 and More Inhabitants.* Kent, Ohio: Kent State Normal College, 1928. 170 p. (Doctor's thesis, Ohio State University, 1926.)

248. Linn, Henry H. *Safeguarding School Funds.* Contributions to Education, No. 387. New York: Teachers College, Columbia University, 1929. 187 p.

249. Marberry, James O. *The Administration of Public Education in Centralized and Coordinated Schools.* University of Texas Bulletin, No. 2810. Austin, Tex.: the University, 1928. 123 p.

250. McGaughy, J. R. *The Fiscal Administration of City School Systems.* Publications of the Educational Finance Inquiry, Vol. 5. New York: Macmillan Co., 1924. 95 p.

251. Reeder, Ward G. *The Business Administration of a School System.* Boston: Ginn and Co., 1929. 454 p.

252. Reeves, Charles Everand, and Ganders, Harry Stanley. *School Building Management.* New York: Teachers College, Columbia University, 1928. 395 p.

253. Smith, Harry Pearse. *The Business Administration of a City School System.* Contributions to Education, No. 197. New York: Teachers College, Columbia University, 1925. 129 p.

254. Smith, Harry Pearse. *Business Administration of Public Schools.* Yonkers-on-Hudson, N. Y.: World Book Co., 1929. 432 p.

255. Yakel, Ralph. *The Legal Control of the Administration of Public School Expenditures.* Contributions to Education, No. 388. New York: Teachers College, Columbia University, 1929. 167 p.

256. Young, Dale S. *Control of Available Public School Income.* Contributions to Education, No. 305. New York: Teachers College, Columbia University, 1928. 110 p.

Chapter VIII. Financial Economies in Business Management of Schools

257. Abel, J. F. *A Study of 260 School Consolidations.* U. S. Department of the Interior, Bureau of Education, Bulletin, 1924, No. 32. Washington, D. C.: Government Printing Office, 1924. 39 p.

258. Allen, J. E. "Placing School Building Insurance." *American School Board Journal* 58: 38-39; March, 1919.

259. Almack, John C. "The Maintenance of School Buildings." *American School Board Journal* 71: 45-47, 143-44; July, 1925.

260. Alt, Harold L. "Saving Fuel Costs in School Heating." *American School Board Journal* 78: 54-55; May, 1929.

261. American School Board Journal. "Fire Insurance for School Property." *American School Board Journal* 70: 101-2; April, 1925.

262. Anderson, C. J., and Fowlkes, John Guy. "The Selection, Purchase, and Distribution of School Supplies." *American School Board Journal* 77: 49-50, 161-62, 170; July, 1928.

263. Ayer, Fred C. "A Study of Efficiency in Different Types of School Organization." *Journal of Educational Research* 11: 104-12; February, 1925.
264. Barr, A. S. "Textbook Accounting." *Elementary School Journal* 23: 127-35; October, 1922.
265. Bates, Daniel A. *The Relation of Class-Size to Teaching Efficiency.* Unpublished master's thesis, Department of Education, University of Chicago, 1928. 44 p.
266. Beach, Fred F. "Saving Thirty Per Cent on Insurance." *American School Board Journal* 82: 59; June, 1931.
267. Bell, A. Howard. "Operation Costs of the Gary Plan." *School Executives Magazine* 48: 486-88, 518-19; July, 1929.
268. Beyer, Walter F. "Practicability of State Insurance Funds." *American School Board Journal* 83: 48, 116, 119; September, 1931.
269. Bliss, Don C. "Platoon School in Practice." *Elementary School Journal* 20: 510-15; March, 1920.
270. Brintnall, B. W. "Saving Seattle School Money." *American School Board Journal* 70: 42, 135; March, 1925.
271. Brown, E. M. "Purchase of School Supplies and Award of Contracts." *American School Board Journal* 57: 25-26, 85; July, 1918.
272. Brown, E. M. "The Standardization of School Supplies." *American School Board Journal* 55: 27-28; July, 1917.
273. Buckingham, B. R., and Reeder, Ward G. "A Study of School Economies." *Educational Research Bulletin* 4: 67-70; February 18, 1925. Ohio State University.
274. Burris, Benjamin J. *The Cost of Instruction in Indiana High Schools.* Unpublished master's thesis, Indiana University, 1924. 103 p.
275. Butsch, Russell L. C. "Equipment, Duties, and Salaries of School Janitors in Wisconsin." *American School Board Journal* 82: 43-44, 127, May; 57-58, June, 1931.
276. Butterworth, Julian E. "Transportation Conditions and Costs in New York." *New York Education* 17: 629-31; March, 1930.
277. Clark, Louise. "The County Unit of School Administration Equalizes Educational Opportunities in Utah." *Tax Digest* 6: 101-3; March, 1928.
278. Conrad. C. W. "School Supply Management." *School Executives Magazine* 50: 416-17; May, 1931.
279. Cook, Katherine M. "By What Standard Shall School Costs Be Measured?" *School Life* 11: 35; October, 1925.
280. Cooley, M. S. "Vacuum Cleaning Systems in Schools." *American School Board Journal* 57: 27-29, 73-74; September, 1918.
281. Dalthorp, Charles J. "How To Improve Janitorial Service in the Smaller City Schools." *Nation's Schools* 6: 25-28; July, 1930.
282. Davies, C. T. *Transporting School Children in Certain Counties of Florida.* Unpublished master's thesis, Duke University, 1931. 130 p.
283. Demary, R. C. "Factors in the Efficiency of School Heating." *American School Board Journal* 79: 43-45; November, 1929.
284. Demary, R. C. "Purchasing Coal for Schools." *American School Board Journal* 79: 45-46; August, 1929.
285. Donnelly, Alice M. "Some Economies Which Have Been Effected in the Administration of Home Economics in Public Schools of Ohio." *Educational Research Bulletin* 4: 272-73; September 23, 1925. Ohio State University.
286. Engelhardt, N. L. "What Is Efficient School-Business Administration?" *American School Board Journal* 80: 41-42; May, 1930.
287. Engelhardt, N. L., Reeves, C. E., and Womrath, G. F. *Standards for Public School Janitorial-Engineering Service.* New York: Teachers College, Columbia University, 1926. 53 p.
288. Evans, Frank O. *Factors Affecting the Cost of School Transportation in California.* U. S. Department of the Interior, Office of Education, Bulletin, 1930, No. 29. Washington, D. C.: Government Printing Office, 1930. 42 p.
289. Feinstein, H. L., and West, J. C. "A Simple Method for Determining the Relative Efficiency of Coals." *American School Board Journal* 83: 34; November, 1931.

290. FORD, WILLARD S. "Necessity of Larger School Units Revealed by Costs of Small High Schools." *Tax Digest* 6: 232-34; July, 1928.
291. FORSTER, H. W. *Fire Protection for Schools.* Prepared and printed for the Department of the Interior, Bureau of Education. Boston: National Fire Protection Association, 1919. 44 p.
292. FOWLKES, JOHN GUY, ANDERSON, C. J., and JONES, LEE F. "Allotments and Costs of Janitorial-Engineering Supplies." *American School Board Journal* 79: 69, 147-48; July, 1929.
293. GANDERS, H. S. "Central Vacuum-Cleaning Systems." *American School Board Journal* 81: 50, 142, 144; July, 1930.
294. GANDERS, HARRY S., and REEVES, CHARLES E. "Selection, Promotion, Tenure, and Dismissal of School Janitor-Engineers." *American School Board Journal* 80: 53-54, 142, 144, February; 54, 144, April, 1930.
295. GARBER, J. A. *The School Janitor.* U. S. Department of the Interior, Bureau of Education, Bulletin, 1922, No. 24. Washington, D. C.: Government Printing Office, 1922. 55 p.
296. GAUMNITZ, WALTER H. *The Smallness of America's Rural High Schools.* U. S. Department of the Interior, Bureau of Education, Bulletin, 1930, No. 13. Washington, D. C.: Government Printing Office, 1930. 78 p.
297. GOLDBERG, EDWARD. "The Purchase of Rural School Supplies in California." *American School Board Journal* 55: 23-24, 79; December, 1917.
298. GOOLD, H. R. "How Eugene, Oregon, Lowered Costs." *Journal of Education* 113: 401-02; April 13, 1931.
299. GREEN, GEORGE. *Consolidated High Schools in Ohio.* Unpublished master's thesis, Department of Education, University of Chicago, 1930. 109 p.
300. GREENE, HARRY E. "Excessive Cost of Transportation under the Contract System." *American School Board Journal* 73: 70; October, 1926.
301. GREEN, WILLIAM V. "Testing of Materials for School Use." *American School Board Journal* 57: 25-27; October, 1918.
302. HADLEY, H. H. *Size of Administrative Unit and School Efficiency in Colorado.* Unpublished master's thesis, Colorado State Teachers College, 1927. 194 p.
303. HALLETT, EDWIN S. "A Better Budget for Summer Repairs of Schoolhouses." *American School Board Journal* 76: 56, 141; June, 1928.
304. HAMMACK, DAVID WILLIAM. *Subject Distribution and Comparative Cost in Fourth-Class City High Schools.* Unpublished master's thesis, University of Kentucky, 1930. 62 p.
305. HART, F. W., and PETERSON, L. H. "Economies in Schoolhousing." *American School Board Journal* 73: 42, 153, July, 1926; 74: 65-66, 154, May, 1927.
306. HART, F. W., and PETERSON, L. H. "The School District System of California." *Tax Digest* 6: 267-76; August, 1928.
307. HENRY, NELSON B. *A Study of Public School Costs in Illinois Cities.* Publications of the Educational Finance Inquiry, Vol. 12. New York: Macmillan Co., 1924. Part III, "The High School Curriculum in Its Relation to High School Costs," p. 54-73.
308. HILL, GEORGE MANETT. *A Study of the Operation of School Plants and Certain Current Expenses for Supplies.* Unpublished master's thesis, University of Pittsburgh, 1930. 93 p. Abstract in *University of Pittsburgh Bulletin* 27: 291-92; November, 1930.
309. HIXSON, JOSEPH H. *Fuel-Saving Practices and Devices.* University of the State of New York, Bulletin No. 946. Albany: State Education Department, 1930. 29 p.
310. HOLY, T. C. "Relation of Size to Cost of Operation in Certain Schools of Iowa." *Journal of Rural Education* 3: 317-22; March, 1924.
311. HOOD, J. T. "Instruction Costs in Typical Small High Schools—A Study." *Nation's Schools* 4: 63-68, September; 38-42, November, 1929.
312. HUDELSON, EARL. "Class Size Opinions, Evidence, and Policies in Secondary Schools." *North Central Association Quarterly* 4:196-208; September, 1929.
313. HUNTER, FRED M. "Efficient Expenditure of School Moneys." *American School Board Journal* 76: 43-44; May, 1928.
314. HUTCHISON, C. S. *Pupil Transportation in Logan County, Ohio, School Districts.* Unpublished master's thesis, Ohio State University, 1930. 62 p.

315. Indiana Rural Education Survey Committee. *Report.* Indianapolis: State Department of Public Instruction, 1926. 130 p.
316. Johns, Roe Lyell. *State and Local Administration of School Transportation.* Contributions to Education, No. 330. New York: Teachers College, Columbia University, 1928. 134 p.
317. Jones, R. G. "Possible Economies through Control of Business Administration." *School and Society* 19: 297-300; March 15, 1924.
318. Kelty, C. V. "Buying School Supplies." *American School Board Journal* 81: 43-44; July, 1930.
319. Ketler, Frank C. *Reserve Funds in Public School Finance.* Contributions to Education, No. 456. New York: Teachers College, Columbia University, 1931. 77 p.
320. Linn, H. H. "Practical School-Business Economies." *American School Board Journal* 82: 38-40, 125-26; June, 1931.
321. Linn, H. H. "What Interest Shall School Deposits Bring?" *American School Board Journal* 80: 51-52; February, 1930.
322. Loomis, A. K. "The Financial Aspects of School Administration in Small and Medium-Sized High Schools of Kansas." *Journal of Rural Education* 2: 151-58; January, 1922.
323. Lovejoy, Philip C. "Diverse Economies That Mean Money to the System." *Nation's Schools* 8: 82-84; August, 1931.
324. Lovejoy, Philip C. "Facilitating the Purchase, Storage and Delivery of Supplies." *Nation's Schools* 4: 79-82, October; 90, 92, 94, November, 1929.
325. Lovejoy, Philip C. "Laying in the Winter's Coal Supply for the School System." *Nation's Schools* 4: 79-81; August, 1929.
326. Lovejoy, Philip C. "Miscellaneous Economies That Lead to Substantial Savings." *Nation's Schools* 6: 90, 92, 94; October, 1930.
327. Lovejoy, Philip C. "Miscellaneous Expenses That May Be Reduced To Save Money." *Nation's Schools* 8: 90, 92, 93. July, 1931.
328. Lovejoy, Philip C. "Saving Money by New Techniques." *Nation's Schools* 7: 74-76; May, 1931.
329. Lovejoy, Philip C. "Saving Money by the Concentration of Service." *Nation's Schools* 7: 75-78, 80, 82; April, 1931.
330. Lovejoy, Philip C. "Saving Money in the Personnel Budget." *Nation's Schools* 7: 96, 98, 100, 102; March, 1931.
331. Lovejoy, Philip C. "Securing Efficient Janitorial Service." *Nation's Schools* 3: 17-21; January, 1929.
332. McClellan, Edward E. *Possible Economies in a County Administration of Schools.* Unpublished master's thesis, Ohio State University, 1930. 111 p.
333. McClinton, J. W. "Some Uneconomic Factors in School Buying." *School Executives Magazine* 51: 17-18; September, 1931.
334. Melchior, William T. *Insuring Public School Property.* Contributions to Education, No. 163. New York: Teachers College, Columbia University, 1925. 187 p.
335. Michigan Education Association. *School Economies Through Efficient Administration and Management.* Bulletin No. 22. Lansing, Michigan: the Association, 1931.
336. Minnesota Department of Education, Statistical Division. *A Study of Elementary and High School Costs in Districts Maintaining Class A High Schools and High School Departments.* T. J. Berning, statistician. St. Paul: the Department, 1930. 58 p.
337. Monsees, A. H. "A Study of the Cost of High School Instruction in Kansas City." *American School Board Journal* 55: 21-22, 79, December, 1917; 56: 24, January, 1918.
338. Mothershead, G. B. *Unit Costs of Transportation in Oklahoma.* Unpublished master's thesis, University of Oklahoma, 1927. 64 p.
339. Mullan, J. S., chairman. "Selection, Purchase, Storage, and Distribution of Public School Supplies." *Proceedings, 1930.* Trenton, N. J.: National Association of Public School Business Officials (John S. Mount, secretary, State Office Building), 1930. p. 74-84.

340. MULLAN, J. S. "School Supplies—Their Purchase and Distribution." *American School Board Journal* 77: 51, 149-50; July, 1928.
341. MUSTARD, W. H. *A Survey of the Janitorial Service of Ohio.* Unpublished master's thesis, Ohio State University, 1929. 99 p.
342. NANNINGA, S. P. "Costs and Offerings of California High Schools in Relation to Size." *Journal of Educational Research* 24: 356-64; December, 1931.
343. NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. *The Textbook in American Education. Thirtieth Yearbook,* Part II, National Society for the study of Education, Bloomington, (Ill.): Public School Publishing Company, 1931. 364 p.
344. NEW YORK COMMISSION ON VENTILATION. *School Ventilation, Principles and Practices.* New York: Teachers College, Columbia University, 1931. 73 p.
345. NUTTALL, L. JOHN. *Progress in Adjusting Differences of Amount of Educational Opportunity Offered under the County Unit Systems of Maryland and Utah.* Contributions to Education, No. 431. New York: Teachers College, Columbia University, 1931. 105 p.
346. OLSEN, M. S. "School Housekeeping." *American School Board Journal* 73: 43-44, December, 1926; 74: 46, 133, February; 48, 161-62, March; 75: 53, August, 1927.
347. PACE, HENRY A. *School Building Costs in Utah.* Unpublished doctor's thesis, University of Cincinnati, 1928. 158 p.
348. PAYNE, JAMES O. *A Study of the Administration of Pupil Transportation in the Centralized Schools of Oklahoma, 1928-1929.* Unpublished master's thesis, Oklahoma Agricultural and Mechanical College, 1930.
349. PLATTS, P. K. "Does State Insurance in School Property Pay?" *American School Board Journal* 83: 59; July, 1931.
350. RAMSEY, H. E. "School Building Maintenance." *American School Board Journal* 72: 88, 168, January; 51-52, 137-38, February; 66-67, March; 55-56, 141-42, April; 108-111, May; 54, 104, 107, June; 73: 44, 164, July; 50, September, 1926.
351. REAVIS, W. C. "Evaluation of the Various Units of the Public School System." *Review of Educational Research* 1: 173-99; June, 1931.
352. REEDER, WARD G. "Community Insurance of School Buildings." *Educational Research Bulletin* 4:161-62; April 15, 1925. Ohio State University.
353. REEVES, CHARLES E. "The Work of the School Janitor." *American School Board Journal* 70: 48, 150, June; 71: 48, 135-36, July; 47-48, August; 51-52, 140, September; 65-67, 137-38, October; 55-56, 133-34, 137-38, November; 55-56, 129-30, December, 1925; 72: 65-66, March; 59-60, April, 1926.
354. REEVES, CHARLES E. *An Analysis of Janitor Service in Elementary Schools.* Contributions to Education, No. 167. New York: Teachers College, Columbia University, 1925. 194 p.
355. REEVES, FLOYD W. *The Political Unit of Public School Finance in Illinois.* Publications of the Educational Finance Inquiry, Vol. 10. New York: Macmillan Co., 1924. p. 108-14.
356. RICH, L. H. "The Purchase and Distribution of Equipment and Supplies." *American School Board Journal* 75:47-48, August, 1927.
357. RIESBECK, E. W. "Summer Care of School Heating and Ventilating Plant." *American School Board Journal* 73: 65-66, 170; July, 1926.
358. ROBERTS, LAKIN FISKE. *The Administrative Effects of Reorganization in Small High Schools of West Virginia.* University of Iowa Studies in Education, Vol. 4, No. 8. Iowa City: State University of Iowa, 1928. 61 p. (Doctor's thesis, 1927.)
359. ROBINSON, ERDIS. "Standardizing the Work and the Pay of School Custodians." *School Executives Magazine* 50: 18-20, 40; September, 1930.
360. ROE, WARREN A. "Comparative Costs of Integrated All-Year Schooling and of Part-Time Schooling." *Educational Method* 10: 350-58; March, 1931.
361. ROEMER, JOSEPH E. "Weaknesses of the Small High School." *School Executives Magazine* 48: 307-09, 322; March, 1929.
362. ROSSMAN, JOHN G. "Comparative Costs and Work-Study-Play Organization." *American School Board Journal* 68: 53-54; June, 1924.

363. ROUBAL, FRANK J. *Teaching Costs in the High Schools of Idaho.* Unpublished master's thesis, University of Oregon, 1930. 26 p.
364. ROUDEBUSH, G. E. "Some Practical Economies in School Administration." *American School Board Journal* 78: 41-42; June, 1929.
365. RUSSELL SAGE FOUNDATION, DIVISION OF EDUCATION. *Fire-Protection in Public Schools.* Pamphlet E132. New York: the Foundation, 1913. 16 p.
366. SCHWARTZ, H. M. *Improvement in the Maintenance of Public School Buildings.* Contributions to Education, No. 240. New York: Teachers College, Columbia University, 1926. 74 p.
367. SCOTT, FRANK A. "An Experience in Maintenance." *American School Board Journal* 75: 50, 145; July, 1927.
368. SELKE, GEORGE A. *Transportation Costs in Minnesota Consolidated Schools.* U. S. Department of the Interior, Bureau of Education, Rural School Leaflet, No. 29. Washington, D. C.: Government Printing Office, 1924. 7 p.
369. SHAMBAUGH, C. G. "Depreciation of Public School Buildings." *American School Board Journal* 73: 65-66; November, 1926.
370. SHEPHERD, H. P. "Economy through Efficient Business Management." *American School Board Journal* 80:70, 72, 74, 77; February, 1930.
371. SHERARD, J. L. "Free Insurance for School Buildings." *American School Board Journal* 73: 40; November, 1926.
372. SHIPLEY, A. H. "A Comparison of Prices Paid by Central Purchasing and Individual District Buying for School Supplies." *American School Board Journal* 79: 50, 142, 144; July, 1929.
373. SKAALAND, S. G. "Public-School Property Insurance." *American School Board Journal* 75: 41-42; October, 1927. Summary of master's thesis, University of Minnesota, 1926, entitled: *An Analysis of the Practices and the Procedures Followed in Insuring School Property in Minnesota.*
374. SMITH, HARVEY A. *Economy in Public School Fire Insurance.* Contributions to Education, No. 428. New York: Teachers College, Columbia University, 1930. 111 p.
375. SPAIN, CHARLES L. *The Platoon School.* New York: Macmillan Co., 1924. 262 p.
376. STEVENSON, P. R. *Class-Size in the Elementary School.* Ohio State University Studies, Vol. 2, No. 10. Bureau of Educational Research Monographs, No. 3. Columbus: Ohio State University, 1925. 35 p.
377. STEVENSON, P. R. "More Evidence Concerning Large and Small Classes." *Educational Research Bulletin* 4: 231-33; May 27, 1925. Ohio State University.
378. STEVENSON, P. R. *Smaller Classes or Larger.* Journal of Educational Research Monographs, No. 4. Bloomington, Illinois: Public School Publishing Company, 1923. 127 p.
379. STONE, H. E. *The Costs of Establishing and Operating Consolidated Schools in Iowa.* Unpublished master's thesis, Iowa State College, 1928. 50 p.
380. STRAYER, GEORGE D., director. *Report of the Survey of the Schools of Lynn, Massachusetts.* New York: Teachers College, Columbia University, 1927. p. 126-30.
381. STRAYER, GEORGE D., and HAIG, ROBERT MURRAY. *The Financing of Education in the State of New York.* Publications of the Educational Finance Inquiry, Vol. 1. New York: Macmillan Co., 1923. p. 62-67; 190-91.
382. TAYLOR, J. W. *Insuring Public School Property in Mississippi.* Unpublished master's thesis, George Peabody College for Teachers, 1930. 91 p.
383. TAYLOR, L. C. *Per Pupil Cost of Instruction in 50 Consolidated and 50 Non-consolidated Schools of Iowa.* Unpublished master's thesis, Iowa State College, 1929. 47 p.
384. TAYLOR, ROBERT B. *Principles of School Supply Management.* Contributions to Education, No. 228. New York: Teachers College, Columbia University, 1926. 145 p.
385. TEXAS STATE DEPARTMENT OF EDUCATION. *Transportation Costs and Problems in Texas Rural Schools,* Bulletin No. 205. Austin: the Department, 1926. 14 p.
386. THOMAS, R. H. "Fire Insurance." *American School Board Journal* 57: 35-37; September, 1918.
387. THOMAS, JOHN J. "Fundamentals of Insurance for School Properties." *American School and University, 1930-1931.* New York: American School Publishing Corporation, 1930. p. 176-77.

388. Turnbull, George A. *Cost of Education in Various Junior High Schools in the Los Angeles City System.* Unpublished master's thesis, University of Southern California, 1930. 87 p.
389. Utah State Department of Public Instruction. *Study of Transportation in Schools of Utah.* Revised edition. Salt Lake City: the Department, 1928. 57 p.
390. Van Dyke, G. E. "Getting Full Value in School Business Management." *American School Board Journal* 83: 49-50, 119-20; September, 1931.
391. Van Oot, B. H. "Analysis of the School Janitor's Job." *American School Board Journal* 66: 55-56, 146; May, 1923.
392. Waring, Ralph G. "The Maintenance and Reconditioning of School Equipment." *American School Board Journal* 73: 69-70, 173; July, 1926.
393. Warren, Russell E. *The Comparative Cost of the Different Methods of Motor Transportation of School Children in Indiana.* Unpublished master's thesis, Indiana University, 1929. 35 p.
394. Werner, J. C. "Economy and Equalization in Insurance Expenditures." *American School Board Journal* 81: 44; November, 1930.
395. Wetherow, E. B. *Plans for Obtaining Higher Efficiency and Lower Cost of Maintenance of Small High Schools.* Bulletin, No. 56, 1922. Indianapolis: Indiana State Department of Public Instruction, 1922. 11 p.
396. Wheat, Harry G. "Costs of Instruction in the High Schools of West Virginia." *School Review* 26: 438-50; June, 1918.
397. Winspear, Clara Marie. *Mechanical Cleaning Service in Public Schools of Large American Cities.* Unpublished master's thesis, University of Cincinnati, 1930. 78 p.
398. Womrath, George F. "School Janitorial and Engineering Service." *American School Board Journal* 69: 38, 132, December, 1924; 70: 54, 144, February; 45-46, March; 68, 70, 72, 74, April; 41-42, 135, May; 47, June; 71: 52-54, 144, July; 68, August; 116, 119-20, October, 1925.

Chapter IX. State and Federal Aid

399. Adams, Jesse E. *A Study in the Equalization of Educational Opportunities in Kentucky.* Bulletin of the University of Kentucky, Vol. 20, No. 9. Lexington, Kentucky: the University, 1928. 268 p.
400. Alexander, Carter. *Educational Finance Studies.* New York: Teachers College, Columbia University, 1931. 92 p.
401. Baldwin, Robert D. *Financing Rural Education.* Stevens Point, Wisconsin: Rural Service Press, 1927. 210 p.
402. Burns, Robert L. *Measurement of the Need for Transporting Pupils.* Contributions to Education, No. 289. New York: Teachers College, Columbia University, 1927. 61 p.
403. Cavins, Lorimer V., and Bowman, Edgar L. *Financing of Education in West Virginia.* Charleston, West Virginia: State Board of Education, 1926. 94 p.
404. Connecticut State Board of Education. *Development of State Support and Control of Education in Connecticut.* Bulletin No. 4, 1926. Hartford, Connecticut: the Board, 1926. 74 p. Prepared by Mrs. Helen M. Walker.
405. Connecticut State Board of Education. *Financing Education in Connecticut.* Hartford, Connecticut: the Board, 1927. 198 p.
406. Cubberley, Ellwood P. *School Funds and Their Apportionment.* Contributions to Education, No. 2. New York: Teachers College, Columbia University, 1905. 255 p.
407. Cubberley, Ellwood P. *State School Administration.* Boston: Houghton Mifflin Co., 1927. 773 p.
408. Dawson, Howard A., and Little, Harry A. *Financial and Administrative Needs of the Public Schools of Arkansas.* Vol. I. Little Rock, Arkansas: State Superintendent of Public Instruction, 1930. 100 p.

409. Grossnickle, Foster E. *Capital Outlay in Relation to a State's Minimum Educational Program.* Contributions to Education, No. 464. New York: Teachers College, Columbia University, 1931. 67 p.

410. Harry, David P. *Cost of Living of Teachers in the State of New York.* Contributions to Education, No. 320. New York: Teachers College, Columbia University, 1928. 184 p.

411. Illinois State Teachers Association, Department of Research and Statistics. *Equalizing to Higher Levels.* Springfield, Illinois: the Association, 1930. 33 p. Mimeographed.

412. Jaggard, Guy H. "Cost of Living in Different Kansas Communities." In the *Report of the State School Code Commission of Kansas.* Supplement to Vol. II. Topeka, Kansas: Kansas State Printing Plant, 1928. p. 44-55.

413. Job, Leonard B. "Financing Public Education in Ohio." *Educational Research Bulletin* 10: 29-34; January 21, 1931. Ohio State University.

414. Johns, Roe L. *State and Local Administration of School Transportation.* Contributions to Education, No. 330. New York: Teachers College, Columbia University, 1928. 134 p.

415. Kansas' State School Code Commission. *Report.* "A Plan for Providing Equality of Educational Opportunity in Kansas—A Basic Inquiry Made for the State School Code Commission," by Paul R. Mort. Supplement to Vol. II. Topeka, Kansas: Kansas State Printing Plant, 1928. 100 p.

416. Maryland State Department of Education. *Equalizing Educational Opportunities in Maryland through a Minimum Program and an Equalization Fund.* Maryland School Bulletin, Vol. 12, No. 1. Baltimore, Maryland: State Department of Education, 1930. 79 p.

417. Maryland State Department of Education. *Tentative State Program for Public Elementary and High Schools, 1922-23.* Maryland School Bulletin, Vol. 2, No. 2. Baltimore, Maryland: State Department of Education, 1921. 30 p.

418. Morrison, Fred W. *Equalization of the Financial Burden of Education among Counties in North Carolina.* Contributions to Education, No. 184. New York: Teachers College, Columbia University, 1925. 88 p.

419. Morrison, Henry C. *The Financing of Public Schools in the State of Illinois.* Publications of the Educational Finance Inquiry, Vol. 9. New York: Macmillan Co., 1924. 162 p.

420. Mort, Paul R. "Equalization of Educational Opportunity." *Journal of Educational Research* 13: 90-103; February, 1926.

421. Mort, Paul R. *The Measurement of Educational Need.* Contributions to Education, No. 150. New York: Teachers College, Columbia University, 1924. 84 p.

422. Mort, Paul R. *State Support for Public Schools.* New York: Teachers College, Columbia University, 1926. 104 p.

423. Mort, Paul R., Simpson, Alfred D., and others. *State Support for Public Schools in New York State as Related to Tax Relief and Educational Expansion.* A Report to the New York State Commission for the Revision of the Tax Laws. Memorandum No. 2. Albany, New York: State Education Department, 1932. 81 p.

424. National Advisory Committee on Education. *Federal Relations to Education.* Part I, Committee Findings and Recommendations; Part II, Basic Facts. Washington, D. C.: the Committee, 1931. Part I, 140 p.; Part II, 448 p.

425. Neulen, Lester N. *State Aid for Educational Projects in the Public Schools.* Contributions to Education, No. 308. New York: Teachers College, Columbia University, 1928. 84 p.

426. New York Commission on School Finance and Administration. *Financing Education in Cities.* Legislative Document, 1926, No. 92. Albany: State of New York, 1926. 146 p.

427. New York Special Joint Committee on Taxation and Retrenchment of the Legislature of the State of New York. *State Aid for the Public Schools in the State of New York.* Albany: State of New York, 1925. 84 p.

428. Norton, John K. *Ability of the States To Support Education.* Washington, D. C.: National Education Association, 1926. 88 p. Also published as *Research Bulletin* 4: 1-88; January and March, 1926. Washington, D. C.: National Education Association.

429. Pennsylvania Commission To Study the Distribution of State Subsidies to School Districts. *Report.* Harrisburg, Pennsylvania: Department of Public Instruction, 1927. 302 p.
430. Reusser, Walter C. *Equalization of Educational Opportunity and Equalization of School Support in Wyoming.* Research Bulletin No. 1. Cheyenne, Wyoming: Wyoming State Teachers Association (B. H. McIntosh, secretary), 1929. 52 p.
431. Russell, William F., and others. *The Financing of Education in Iowa.* Publications of the Educational Finance Inquiry, Vol. 8. New York: Macmillan Co., 1925. 279 p.
432. Sears, Jesse B., and Cubberly, Ellwood P. *The Cost of Education in California.* Publications of the Educational Finance Inquiry, Vol. 7. New York: Macmillan Co., 1924. 353 p.
433. Singleton, Gordon G. *State Responsibility for the Support of Education in Georgia.* Contributions to Education, No. 181. New York: Teachers College, Columbia University, 1925. 56 p.
434. Staffelbach, Elmer H. "The California Property Tax." *Sierra Educational News* 26: 18-20, 64; October, 1930.
435. Staffelbach, Elmer H. "California Public School Finances." *Sierra Educational News* 26: 14-18; October, 1930.
436. Strayer, George D., and Haig, Robert Murray. *The Financing of Education in the State of New York.* Publications of the Educational Finance Inquiry, Vol. 1. New York: Macmillan Co., 1923. 205 p.
437. Swift, Fletcher Harper, Morgan, Walter E., Staffelbach, E. H., and others. *An Equalization Plan for California Schools.* (Committee on Equalization of the California Public School Superintendents' Association.) 1931. 42 p.
438. Swift, Fletcher Harper. *Federal and State Policies in Public School Finance in the United States.* Boston: Ginn and Co., 1931. 472 p.
439. Swift, Fletcher Harper. *A History of Public Permanent Common School Funds in the United States, 1795-1905.* New York: Henry Holt and Co., 1911. 493 p.
440. Swift, Fletcher Harper. "Shall California Establish a State Public School Equalization Fund?" *Sierra Educational News* 26: 12-14; October, 1930.
441. Swift, Fletcher Harper, and Zimmerman, Bruce Lewis. *State School Taxes and School Funds and Their Apportionment.* U. S. Department of the Interior, Bureau of Education, Bulletin, 1928, No. 29. Washington, D. C.: Government Printing Office, 1929. 431 p.
442. Swift, Fletcher Harper, Graves, Richard A., and Tiegs, Ernest W. *Studies in Public School Finance: The East—Massachusetts, New York, New Jersey.* Research Publications of the University of Minnesota, Education Series No. 2. Minneapolis: University of Minnesota, 1923. 240 p.
443. Swift, Fletcher Harper, Del Plaine, F. K., and Troxel, O. L. *Studies in Public School Finance: The Middle West—Illinois, Minnesota, South Dakota, with a supplement on Alaska.* Research Publications of the University of Minnesota, Education Series No. 3. Minneapolis: University of Minnesota, 1925. 329 p.
444. Swift, Fletcher Harper, and Goldthrope, John Harold. *Studies in Public School Finance: The South—Arkansas, Oklahoma, Alabama, Tennessee.* Research Publications of the University of Minnesota, Education Series No. 4. Minneapolis: University of Minnesota, 1925. 224 p.
445. Swift, Fletcher Harper. *Studies in Public School Finance: The West—California and Colorado.* Research Publications of the University of Minnesota, Education Series No. 1. Minneapolis: University of Minnesota, 1922. 221 p.
446. Thrun, F. M. *School Financing in Michigan; A Plan To Equalize the Burden.* Special Bulletin No. 212, January, 1931. East Lansing, Michigan: Agricultural Experiment Station, Michigan State College of Agriculture and Applied Science, 1931. 79 p.
447. Updegraff, Harlan. *Financial Support.* Rural School Survey of New York State, Vol. 3. Ithaca, N. Y.: Joint Committee on Rural Schools, 1922. 233 p.
448. Waterman, Ivan R. *Equalization of the Burden of Support for Education.* Doctor's thesis, University of California, 1930. 93 p.
449. Waterman, Ivan R. "State Public School Equalization Fund." *Sierra Educational News* 26:26-29; November, 1930.